

# 1 What Is Behavioral Economics?

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## 1.1 Introduction

A recurring theme in this book is the necessity of recognizing that people differ in how they see things. This applies not merely to, say, how they see a particular product, job opportunity or business strategy but also to how economists characterize behavioral economics. It is possible to get a sense of this by comparing my 1988 characterizations of behavioral economics (in the introduction to Earl, 1988) with those offered later by Tomer (2007) and Thaler (2015) or by contrasting the coverage in textbooks such as Baddeley (2013), Cartwright (2014), Dhimi (2016) and Wilkinson (2012). What behavioral economics has been taken to be has changed over the years, with a particularly major change occurring in the last two decades of the twentieth century. But historical accounts of this differ, too: see Sent (2004) and Heukelom (2014). There is not even a consensus about when the first “behavioral” contributions to economics were made.

In this book, the oldest sources referred to are Adam Smith’s *Theory of Moral Sentiments*, published in 1756, and his history of astronomy, published posthumously in 1795; otherwise, the earliest sources come from the period 1870–1910. However, it was not until after World War II that the adjective “behavioral” started being applied to some contributions to economics, most notably George Katona’s pioneering attempts to apply psychology to understanding macroeconomic phenomena (e.g., Katona, 1951) and Herbert Simon’s (1955) work on decision-making. Simon’s contributions earned him the 1978 Alfred Nobel Memorial Prize in Economics Sciences, but nowadays it is common to see his work being completely ignored by those who call themselves behavioral economists. Simon’s focus was on decision-making in organizations, and it led to the development of a “behavioral theory of the firm” by his colleagues Richard Cyert and James March (1963). Their work was widely known in the mid-1970s when, as a Cambridge undergraduate, I was first introduced to behavioral economics. But today Cyert and March’s book receives scant attention from most behavioral economists even though by 2020 Google Scholar listed it as having notched up over 30,000 citations.

Modern behavioral economics has become largely focused on consumer behavior rather than organizations, with much attention given to the work of psychologist Daniel Kahneman, co-recipient (with experimental economist Vernon Smith) of the 2002 Bank of Sweden Prize in Economic Sciences in Memory of Alfred Nobel. It was

Kahneman, together with the late Amos Tversky, who did much of the research on which modern behavioral economics builds. That research became widely known in relation to economics due to Richard Thaler using it as a means for making sense of patterns of behavior that he had noticed and saw as being at odds with conventional economic thinking. Neither Kahneman nor Thaler have sought to promote earlier behavioral economics alongside more recent work. Instead, they give the impression that behavioral economics started around 1979–1980 with the publication of Kahneman and Tversky's (1979) article on prospect theory and that theory's use by Thaler (1980). All in all, this is a very curious state of affairs: a cynic might suggest that it looks rather as if the earlier work has been airbrushed from the history of economic thought by the strategic redefinition of what constitutes behavioral economics. A more charitable and reflexive view would see the situation as resulting from insufficient familiarity with the earlier literature, as a result of the way that scholarly search processes work in the face of information overload (cf. Earl, 1983a, 2017b, 2018).

This book is unusual because it adopts a pluralistic approach, blending elements of both pre- and post-1979/1980 approaches to behavioral economics. Given this, one possible way of introducing behavioral economics would be via a focus on the distinction that Esther-Mirjam Sent (2004) drew between “Old Behavioral Economics” (OBE) and “New Behavioral Economics” (NBE) when she was trying to make sense of the growing interest in behavioral economics that was evident at the turn of the twenty-first century. I have sometimes adopted this strategy, comparing and contrasting the “old” and “new” approaches (as in Earl and Peng, 2012). On this occasion, however, the emphasis will be on things that would characterize the *modus operandi* of someone who wants to practice a pluralistic way of doing behavioral economics with a view to achieving a powerful grand synthesis of compatible aspects of approaches to behavioral economics that have hitherto not been integrated. So what follows is an introduction to the kinds of things you may find yourself doing if you become the kind of behavioral economist that this book has been designed to produce. Along the way, I highlight past debates about the benefits of, and need for, some of the unusual things that such a behavioral economist may be open to doing.

## 1.2 As Is, Not “As If”

The theories that economists build are akin to maps: they help us by presenting a simplified picture of reality. The simplifications that theories and maps entail need to be consistent with their purpose. Consider, for example, the iconic London Underground Map. The purpose of the map is to show users of the Underground the routes that are possible and thereby to help users choose how to get to where they want to go. It was a challenge to do this clearly, but the map's designer, Harry Beck, managed to come up with a clear, fit-for-purpose map that works by only using straight lines (whereas the actual routes entail many curves), with all junctions thereby being at 45° or 90°. This abstraction has the effect of distorting the relative distances

between stations. But this is not misleading so long as users accept that its role is to enable them to work out routes rather than accurate journey distances.

Similarly, when economists construct their models and analyze aspects of the economy, they do so by applying methodological rules that differ depending on what kind of economics they practice and what they try to achieve. At its core, behavioral economics entails constructing economic analysis on foundations that embody knowledge of the challenges that human decision-makers face and how they *actually* behave in trying to deal with them. This knowledge can come from a variety of sources, as will become evident as this chapter proceeds. The golden rule for behavioral economists is that they do not try to make their own lives easier by making false assumptions about how people make their choices or about what people have to grapple with when choosing. For example, we know that there are limits to human attentive, information-processing, imaginative and short-term-memory capacities. These limits impede attempts to take rational decisions: in Herbert Simon’s (1957a, p. 198) phrase, humans suffer from “bounded rationality.” Knowing this, behavioral economists try to see what these limitations imply about behavior in the situations they are trying to analyze. In other words, despite the problems that these limitations pose for their own work, they do not assume them out of the way to make it easier to construct economic models. If the use of an analytical tool would require us to make assumptions that we know to be false, it is the tool that has to be set aside, not what we know about the nature of real human decision-makers.

The golden rule means that if we find ourselves unable to use the kinds of mathematics that economists normally use, we will have to find and learn other forms of mathematics that can accommodate what we know about reality (for example, graph theory or fuzzy set theory), or we will have to confine ourselves to doing our analysis in words, not symbols. Although mathematical methods are generally not used in this book, this is not to say that the material cannot be given a mathematical treatment. For example, aspects of the theory of the workings of the mind that underpins the arguments in Chapters 4 and 7 of this book have been represented mathematically with the aid of graph theory by Brendan Markey-Towler (2018), one of my former doctoral students. Readers who are interested in more formal approaches are strongly encouraged to consult the work of Shiozawa et al. (2019), which complements at many points the perspective offered in this book.

To insist on doing economic analysis based on how things are goes against the arguments in a classic paper by Milton Friedman (1953) that conventional economists have used frequently to justify building economic models with patently unrealistic assumptions. Friedman argued that the usefulness of an economic model lies in its ability to predict something about how the economy works. In his view, models are merely instruments for getting predictions; hence what counts is whether our predictions are realistic, not how we arrive at them. It can thus be OK for economists to theorize “as if” something is true even if they know it is patently false, so long as this leads to a realistic prediction.

Behavior economists reject this defense of unrealistic assumptions on several grounds. For one thing, although Friedman’s paper is frequently referred to as a

means of justifying “as if” theorizing, economic models often yield no testable hypotheses, and the only proof offered for their validity tends to be a mathematical proof. A core part of intermediate economics teaching, namely the analysis of consumer behavior via indifference curves and budget lines, epitomizes this problem: it does not even predict that a rise in a product’s price will result in a reduction in its sales. Secondly, a theory that seems to predict correctly despite being based on patently false assumptions is, in essence, getting the right answer for the wrong reasons. If conditions change, it may cease to predict accurately and thereby cause major embarrassment for those who have used it as a basis for policymaking. A theoretical framework based on knowledge of how things really are is less likely to cause such embarrassments. Finally, it has been evident that in the face of evidence that contradicts the predictions of their models, economists have been prone to cling to the models rather than start trying to build models with more plausible assumptions. Rabin and Thaler (2001) once likened this behavior to that of the pet shop proprietor in the famous Monty Python “dead parrot” comedy sketch, who used all manner of arguments to deny that the parrot he had sold was dead. However, they then pointed out that, unlike die-hard conventional economists, the pet shop proprietor did, in the end, agree there was a problem and offered the customer something else. The “as if” justifications continue but, in effect, the inconvenient evidence gets swept under the carpet. Fortunately, such behavior has become less acceptable as knowledge of empirical anomalies has become more widespread: behavioral economics owes much to Richard Thaler for his work (with a number of coauthors) cataloguing behavior that contradicts the prevailing wisdom about what a “rational” economic actor ought to be observed to do. This work appeared as a series of “nomalies” articles in the *Journal of Economic Perspectives* and many of them were conveniently reprinted in Thaler’s (1992) book *The Winner’s Curse*.

Following Thaler’s critiques, economists working on policy design and chasing research funds have increasingly become open to models based on knowledge of how things are. However, old habits have proved hard to shake off: some of the work that is being presented as behavioral economics is still pretty much in the “as if” mold (see Berg and Gigerenzer, 2010). Where predictions are in short supply, much of the core of conventional economics continues to consist of models that are justified via the “as if” argument. From the behavioral perspective, the core needs to be changed, too, in line with the golden rule. A more realistic approach may require junking traditional models, but it may also open new areas for analysis: for example, those who insist on theorizing “as if” people have “given” “complete” preferences that provide a basis for choice in any situation are denying themselves the opportunity to engage in research to understand how people develop the capacity to make choices as they find themselves in new territory.

It needs to be stressed that the behavioral approach does leave room for keeping economic analysis manageable by leaving out some aspects of reality. At any moment, we may opt only to focus on the significance of some of the things we know about the human condition. For example, we may know that people tend to suffer from “seasonal affective disorder” – in other words, they are prone to get somewhat

depressed during the winter due to fewer hours of daylight being available – and we may acknowledge that this could affect the kinds of choices they make in the winter. But we may leave this out of our analysis where it seems peripheral to the problem at hand. If we are, say, trying to design long-term policies that might result in more people paying off their mortgages before they retire (an issue raised in Thaler, 2015, ch. 9), we can feel comfortable about leaving out this aspect of human behavior. Even though depressive moods may affect spending in winter months, it may be of no relevance for whether a policy will work as the years run by. But in other contexts – for example, if we were modeling stock prices or the demand for different kinds of TV programs over the course of the year – we might want to include it. (For a study of the impact of hours of daylight on stock prices, see Kamstra et al., 2002.)

Being selective about the behavioral knowledge that we use as ingredients in analysis is a different kind of abstraction from that normally evident when the “as if” approach is being employed in conventional economic analysis. In the behavioral approach, we limit the predictive or explanatory power of our analysis by opting not to include some things we might have included. We do not proceed by bringing in things we know to be false. However, it needs to be acknowledged that behavioral economists are prone simply not to refer to things they potentially might have included in their analysis, rather than explicitly drawing them to the reader’s attention in the way that economists conventionally do when making heroic assumptions and adding “other things equal” clauses. With a mass of knowledge on which to base analysis, behavioral economists will try to avoid getting bogged down by always noting the knowledge they are not deploying. It is thus important to be alert to what is possibly being left unsaid, as well as to what has been said, in a piece of behavioral analysis.

As an example of this, consider Richard Thaler’s (1980, p. 43) anecdote about Mr. H, who mows his own lawn, declining the offer from a neighbor’s son to mow it for \$8 but also declining another neighbor’s invitation for him to mow the latter’s similarly sized lawn for \$20. Thaler suggests that Mr. H looks irrational in terms of standard economic theory, since he seems to value the time it takes him to mow one of these lawns as worth less than \$8 *and* more than \$20. However, Thaler’s anecdote presents very little information about the context of Mr. H’s decision. Mr. H may actually see mowing his own lawn both as a form of exercise and as a means for catching up with neighbors, which he will have to forego if he accepts the offer from his neighbor’s son. On the other hand, to mow the other neighbor’s lawn as well as his own may entail both more exercise than he feels he needs and losing time for the other things he wants to do. He may also see this as implying a dent to his social standing: he will become, in effect, his neighbor’s servant if he mows the latter’s lawn and accepts the money. Thus, if Mr. H behaves as per Thaler’s description, he may be operating perfectly logically in terms of how he treats his options. But we will only see this if we get a sense of what his goals are and how he sees the world.

Once we accept the realities of being human, we must rethink how we judge whether human behavior is “irrational” or not. Most modern behavioral economists have chosen to deal with this by using, as a reference point, the orthodox economist’s view of how people ought to behave, even though that view attempts to model

decision-makers “as if” it is cognitively unconstrained. Such an approach is not taken in this book: as humans, we are what we are, and we live in the world as it is, so the quality of our choices should not be judged in terms of a view of “rational” behavior that assumes out of the way the mismatch between our cognitive capacities and the demands that the world places upon them.

If we are not going to use an idealized way of specifying what constitutes “rational” choice, and hence what is meant by “irrational,” what other benchmark(s) can we use? A pluralistic approach seems worth considering. Thus, we might say that behavior should be viewed as irrational if it results in the decision-makers in question doing any of the following:

- Selecting products that are demonstrably dominated by other products as means of meeting their needs, but only in cases where it would have been possible to discover the superior products by using search strategies that are not “exotic,” i.e., by using search strategies that other members of the population use in the context in question.
- Making choices that can be shown to contradict their stated goals.
- Failing to meet the basic needs of themselves and their family members despite having similar resources and educational backgrounds to those who are able to meet these needs.

Such criteria need to be viewed as applying to behavior in the longer term. In the short term, poor outcomes may simply reflect bad luck in unpredictable or complicated environments in which it would be unreasonable to expect decision-makers to do well always (cf. Richardson, 1953). Taking a long-term view of behavior helps to ensure that we do not judge people as poor decision-makers with reference to outcomes that others have achieved because they were lucky.

### 1.3 Decision-Making As a Process

Behavioral economists find it useful to build their analysis of decision-making around the idea of a “decision cycle.” John Dewey, an American philosopher, proposed this concept in his 1910 book *How We Think*. For Dewey, the process of making a decision begins with the recognition of a problem, necessitating the discovery of possible solutions, which in turn need to be evaluated for how well they might serve as a means for solving the problem without causing other problems to arise. It is only after the process of search and evaluation has finished that the decision-maker is in a position to choose what to do. Implementing the decision will not always turn out to be possible and sometimes the decision-maker will need to resort to “plan B” or resume the search process. Sometimes, a plan will not be implemented because products turn out to be unavailable, but changes of plan may also be the result of discovering, when talking to suppliers, that a mistaken view has been taken of what the product that was initially preferred has to offer or what needs to be done to solve the problem. Often, though, the extent of success of the choice only becomes apparent

after it has been implemented and a hindsight review has been conducted. Such a review may lead to the start of another decision cycle, due to the original problem having not been fully solved, or a new problem having been generated by the chosen solution (for some excellent examples, see Loasby, 1976, ch. 5).

Clearly, the search and evaluation stages of a decision-making process sometimes take virtually no time, whereas in other contexts, the process is drawn out over weeks, months or even years and entails the use of multiple sources of inputs for assessing the options that are discovered. In the latter cases, the decision cycle may involve many sub-cycles on the way to the final choice, such as decisions about how to try to find potential solutions and whose input to use when assessing them, with disappointing options forcing a rethink about how to find some better contenders. So, although Chapters 3 to 8 of this book are organized mindful of Dewey's decision cycle idea, it will be emphasized repeatedly that context matters for how decisions get made. This means that our behavioral analysis contrasts sharply with the view of choice presented traditionally in economics: we do not have a "one size fits all" view of choice, and we emphasize the search and evaluation processes that precede the choice stage; we do not simply assume that the decision-maker already knows what the available options are, along with what they each have to offer. Moreover, we recognize that in cases where decisions are reached rapidly, it may be most unwise to theorize "as if" the decision-maker is able to arrive at a decision quickly due to already knowing about all the available options: choices can also be made rapidly by, say, selecting a default option, or following the recommendation of a trusted friend, without considering alternatives.

The decision-cycle perspective necessarily entails bringing psychology in and appreciating the nature of knowledge. A traditional economist sees an occasion for a choice as a self-evident result of a "shock" to which the decision-maker needs to re-optimize his or her actions. But what we know is that two people in the same situation may view it very differently: one may see many problems, while the other may see no cause for concern and may even see it as an opportunity to improve his or her situation. The nature of things – including problems and potential solutions to problems – is not self-evident; rather, it is something that the individual has to construct in his or her mind. As behavioral economists, we take an interest in how people do this. We thus focus on how they allocate their attention to competing incoming stimuli and decide what to make of the stimuli to which they give their attention. Hence behavioral economists make considerable use of the literature from psychology; indeed, the phrase "psychological economics" has in the past often been used as a synonym for behavioral economics. However, we may also need to follow the lead of Brian Loasby (2000) and call upon what philosophers say about the challenges of knowing what is going on and knowing when to change one's model of an aspect of the world.

Once we start viewing choice as a process that is linked to what the decision-maker knows and how that knowledge changes, it becomes necessary to start viewing the rationality of a choice in terms of the process of deliberation that it entailed rather than in terms of whether the outcome was the best the person could achieve in the

circumstances. A behavioral economist thus finds it useful to borrow Herbert Simon's (1976) distinction between "procedural rationality" and "substantive rationality." The former term refers to what constitutes "appropriate deliberation" in a particular context, i.e., *how* the choice ought to be made, whereas the latter captures the traditional economist's concern with whether the strategy or object that was chosen was consistent with the decision-maker's goals and constraints. In the real world, where decisions are taken under time pressure and with limited cognitive capacity, "appropriate deliberation" may entail the use of effective decision-making shortcuts (commonly referred to as "heuristics") rather than trying to gather and take account of all the information that might be available. Decision-making methods of this kind may not be completely reliable but may serve us better than more thorough methods that slow down the process of reaching a choice and thereby cause opportunities to be missed (for example, opportunities to save the lives of those who have arrived at a hospital's emergency admissions department: see Gigerenzer et al., 1999).

Real-world decision-makers face the challenge of finding or creating effective ways of making decisions and then calling them to mind in appropriate contexts. We are not born with all the decision aids that it might be useful to have; worse still, some of those that are hardwired in our brains may actually be highly dysfunctional. This being the case, an obvious role for the economist is as an agent who develops knowledge of effective ways for choosing in challenging situations and shares this knowledge with the wider population of decision-makers. These "ways for choosing" can include quantitative methods such as the operations research techniques that have increasingly been used in organizations since the end of World War II (Simon, 1976, pp. 75–77) but can also consist of simple "do" and "don't" rules for dealing with the challenges of everyday life.

Conventional economics focuses on substantive rationality in relation to the goal of maximizing utility or profits and presumes that it is possible to specify what the substantively rational choice would be in any situation that needs to be analyzed. However, optimal choices may be impossible even for economists to work out in complex and changing choice environments, or where the decision-maker's view of the world evolves during the process of addressing a problem. In this book we recognize that, where optimal choices are problematic to identify, the goals that people strive to achieve may not be reducible to the maximization of utility in terms of a preexisting and well-defined preference system or an unambiguous notion of profit maximization. Rather, people pursue multiple goals that are often arbitrary, open to revision and capable of being met in multiple ways, and/or have a social dimension that focuses on what they achieve relative to the attainments of other people. For example, goals may focus on meeting particular sets of performance standards or achieving better-than-average outcomes. The discovery that others have moved ahead can thus be viewed as a problem, kick-starting a new decision cycle. If choices thereby result in something akin to an arms race, it is hard to view them as substantively rational, but that may not preclude us from assessing the quality of the processes of deliberation that resulted in the choices being made. Yes, it may be futile to engage in a status race, but some ways of trying to enhance our status may be better than others.



## 1.4 The Role of Introspection

Although behavioral economics is well known for employing inputs from psychology, it is important also to acknowledge potential for using other sources of insights into how people behave in the economic system. This section and the two sections that follow it cover sources that behavioral economists employ from time to time that are seen as out of order in terms of the rules of conventional economics. We begin by considering introspection. This technique entails the behavioral economist exploring the implications of accounts of his or her own behavior in a particular kind of situation and/or in respect of a particular kind of products. These accounts may range from short vignettes (as in Earl, 2001) to something more Proustian that runs to many thousands of words (as in the “much too long” version of Earl, 2012). The comments at the end of Section 1.2 about Mr. H’s lawn-mowing choices were informed by my introspection on how I might feel, given my experience as a suburban resident with lawns to mow, if I had been presented with options like those that Mr. H faced. Though I am not Mr. H, my introspection opened the possibility that there might be more to his decision than Thaler had allowed for when presenting it as irrational.

Potential for using introspection in economics was recognized over a century ago by early writers in the deductive, anti-empirical “*a priorist*” tradition that is often associated with the “Austrian” school of economic thought. They called it the “psychological method.” As Terence Hutchison (1977b, p. 159) notes, those who worked in this tradition saw economists as having a great advantage compared with natural scientists, since economists can observe the process of economizing from within, whereas natural scientists can only observe natural phenomena from the outside. Despite this, introspection came to be frowned upon as a tool of economic analysis. This had much to do with what Hutchison (1938) wrote shortly before World War II in his inquiry into economic method. As a visitor to Nazi Germany, the young Hutchison had been dismayed to see what could happen if policies were based on misguided subjective beliefs. He was thus keen to make economists focus on ideas that were capable of falsification and then subject these ideas to empirical tests.

In his critique of the early followers of the “psychological method,” Hutchison (1938, pp. 131–141) was careful to keep “introspection” separate from “*a priorism*.” Despite remarking critically about the dangers of economists generalizing their own perspectives as if these applied to all economic agents, Hutchison argued that introspection does have a place in economics. That place is at the early stages of theory formation; unlike the “*a priorists*,” he did not see it as obviating a subsequent stage in which theories are tested. Unfortunately, to judge from what happened subsequently, economists failed to read Hutchison’s writings closely. Despite his very clear (1938, p. 163) summary remarks, they ended up conflating introspection and *a priorism*. Thus began the prejudice of economics against using introspection about their own lives as a source of ideas for theories about the economic behavior of people in general.

When a behavioral economist nowadays presents results of extensive introspection (as I did in Earl, 1986b, section 7.2, 2001, 2012), this is not done as an attempt to construct a generally applicable *a priorist* analysis. Rather, and consistent with Hutchison's perspective, it is done in order to suggest empirical research opportunities that might otherwise go unnoticed. Via introspection, behavioral economists may notice areas where the conventional wisdom seems to misrepresent how they take their own decisions. Further reflection on what they view themselves as doing may result in testable hypotheses that counter the conventional wisdom. The presentation of introspective analysis may also be useful if it provokes readers to do some introspection of their own in the same context and thereby add to the list of issues that it may be worth researching systematically in that area. (So, if you were Mr. H, how would you see those lawn-mowing options?) This way of using introspection and the style of papers that employ it are borrowed from researchers such as Gould (1991, 1993, 1995) and Holbrook (1995) in marketing. Their use of introspective methods for analyzing consumer behavior was itself inspired by literature from philosophy and psychology extending back as far as confessional essayist Michel de Montaigne ([1533–1592] 1963).

Source credibility is a major issue in introspective research. Devious researchers might deliberately write partly fictitious accounts of their behavior, while well-intentioned researchers might unwittingly include fictitious content due to memory lapses that result in them creating false connections between elements that they recall with accuracy (Wallendorf and Bruch, 1993, pp. 343–345). Cognitive dissonance theory (Festinger, 1957) and the “sour grapes” phenomenon (Elster, 1983) – both of which are employed later in this book – suggest that the mind tends to twist perceptions to remove inconsistencies or downplay the attractive aspects of rejected or unavailable options. Even the observable elements of an introspective account may be hard to verify, as witnesses may be impossible to trace and may have had little incentive to remember the events in question or may have incentives to concoct alternative accounts (e.g., when the potential witness is a former partner). Fortunately, there are three things that behavioral economists can do to help their introspective work to be taken seriously.

First, they should apply the technique to an area of high involvement (in the sense of Laaksonen, 1994). In other words, they should choose an area of major significance to them personally. This may be an area about which they can display an abnormal level of knowledge and where they can reveal painful connections between their use of that knowledge and the state of their personal relationships and finances. Involvement reduces the risk of memory decay if it results in frequent reflection about past choices and experiences.

Secondly, behavioral economists should use introspective techniques in areas in which the complexity and richness of the details they provide may be taken to imply fact rather than fiction. This is because it would take far longer to flesh out a largely fictitious account around the skeleton of an actual experience than it would to write an account that flows freely from memory.

Finally, behavioral economists can enhance the credibility of their introspective contributions by choosing their areas of analysis so that they can play the economics

equivalent of the “humiliation game” that figures in David Lodge’s (1975) novel *Changing Places*. The game described by Lodge is played by English literature academics at a party. To win, a player must confess to having not read a work of English literature that no one else will confess to having not read. In other words, it requires one-upmanship in being poorly read, something that professors of English literature would rationally be reluctant to do in the presence of their peers. By analogy, behavioral economists can win credibility for their introspective reflections by confessing to choices that economists would not view as rational in prospect, or by revealing errors of judgment that were discovered in hindsight and which could have been avoided by operating more like a “rational economic agent” (an “econ” in Thaler’s shorthand). Claims that introspective accounts are accurate will be more credible if such accounts publicize potentially embarrassing aspects of researchers’ lives (cf. the confessions regarding sexual energy and draft evasion in Gould, 1991).

## 1.5 The Role of Anecdotes, Screen Data, and Text

Similar issues arise in respect of the use of anecdotes, i.e., stories or vignettes that refer to particular instances of behavior. Self-knowledge derived via introspection can be a source of anecdotes that one behavioral economist shares with others, but anecdotal evidence about behavior can also be sourced from social networks, published historical accounts, blogs and other media. In the past, economists who tried to use anecdotal evidence as a basis for challenging received wisdom would face a hostile reaction from their peers. The latter would typically argue that the source of the evidence might be questionable and that it was “just” an anecdote that did not necessarily say anything about the behavior of the wider population. Such reactions are understandable: an anecdote could be, say, a myth that has spread around a social network and even if the event it describes actually did occur, it might be utterly unrepresentative of what happens in that class of situations, rather like a statistical outlier. However, some anecdotes may be hard for economists to dismiss because they do seem to encapsulate behavior that is common, even if it had not previously been noticed and argued to be problematic for established theoretical perspectives. Moreover, at some point, a growing portfolio of anecdotes that point in the same direction starts to carry evidential weight akin to that of data set gathered systematically using statistical principles.

Richard Thaler’s relentless use of anecdotes in his critiques of orthodox economics (described in Thaler, 2015) has probably played a major role in making anecdotes much more acceptable within economic analysis. Nowadays, it is common for introductory anecdotes to be used to “motivate” (the readers of) journal articles. It seems that a well-chosen anecdote can now be deployed as a representative case for a wider class of behavior that needs to be explained.

Some behavioral economists have noticed potential for using other informal sources of evidence about how people behave or view the process of choice. They are open to examining the economic content of product reviews that consumers post

online, the ways in which professional product testers reach decisions (as in Earl, 1986b, ch. 10; 1995, ch. 4), or the ways that novelists and writers for the stage and screen portray consumer behavior, career choices and the behavior of firms and other organizations (as in Earl, 2011). Some of us use clips from movie and TV drama to generate discussions in our classes, and behavioral labor economist Arthur H. Goldsmith has even offered an entire course on “Socio-Economic Themes in Literature and Film” in his role as Professor of Economics at Washington and Lee University.

Given the issue of source credibility, it might seem odd for a behavioral economist to be prepared to engage with works of fiction when searching for insights about economic behavior. However, the writers of works that deal with economic issues can be viewed as having reflected on how people would likely behave in the situations about which they are writing, so the drama is potentially a useful guide to what ordinary people may do; it seems hardly likely to have been twisted with a view to supporting or challenging any particular piece of economic theory. In some cases, works of fiction may be based on inside knowledge of the industry at the heart of the drama, or on insights gleaned from people who work there.

For those who are nervous about making use of fiction, an alternative way of employing textual sources in behavioral research is to make use of company archives, as business historians do. Indeed, for those working on a behavioral approach to the firm, works in business history can prove an invaluable source of insights, as I found when writing *The Corporate Imagination: How Big Companies Make Mistakes* (Earl, 1984).

## 1.6 Questionnaires and Ethnographic Research

It is natural for behavioral economists to be open to using interviews and questionnaires to find out about the choices that people make and how they make them: if we want to find out why people behave as they do, why not ask them? One reason for not doing this is the cost of conducting such research, especially on a large scale. There is also the problem of “respondent fatigue” whereby the reliability of answers starts to become compromised if a survey takes longer than about twenty-five minutes to complete. However, today’s behavioral economists would probably be wise to proceed mindful of the reception that awaited pioneering work of this kind in the 1930s and 1940s. This research arrived at findings at odds with conventional economic thinking and it was not well received. In the UK, members of the Oxford Economists’ Research Group (OERG) studied issues such as how prices were set, and the responsiveness of investment decisions to changes in interest rates, by interviewing small samples of managers and having them complete questionnaires. They published their findings in a new journal, *Oxford Economic Papers*, which was swiftly reviewed by Cambridge economist Austin Robinson (1939). He acknowledged that their methods gave them flexibility for dealing with the unique situation of each manager that they interviewed, but he was concerned that he could not judge whether

leading questions had been asked to steer responses in particular directions. He pleaded that in future articles reporting such studies should include full details of the questionnaires that had been used. In the days before journals allowed authors to upload “supplementary online materials” at the journals’ websites, this could be problematic due to its impact on the length of an article. This was especially so if the length of a questionnaire had ballooned out due to attempts to explore particular issues from various directions in order to check for consistency in responses and ensure that the analysis could not be accused of “leading” the participants in particular directions.

The OERG’s work, along with subsequent questionnaire-based research conducted in the US by Richard Lester (1946) on how managers took their decisions about how many workers to hire, also became the target of a full-blown critique, this time by Fritz Machlup (1946). He was concerned about small-scale studies being reported and about the risk of semantic differences between researchers and their subjects leading to erroneous inferences being drawn by the former about the validity of conventional economic theory. Interestingly, despite emphasizing the case for large-scale systematic studies, Machlup seemed also to signal the potential benefits of adopting an ethnographic approach to studying economic behavior: as Lavoie (1990) notes, Machlup took the view that if these researchers had spent more time in close contact with their research subjects, they would probably have come to realize that the managers were actually doing something akin to the marginal trade-offs predicted by conventional economic theory, even though their replies in interviews and questionnaires gave the opposite impression. However, the effect of Machlup’s critique was to pave the way for Friedman’s (1953) “as if” approach to economic method rather than to encourage economists to start operating more like anthropologists and mingle closely with the subjects of their research or operate like a proverbial “fly on the wall.”

As with interview-based behavioral research, ethnographic research clearly can be very time-consuming and challenging to write up in the compact format of a journal article. However, it can be especially effective for understanding the thinking of particular groups and how this affects their behavior. So far, behavioral economists have done little research of this kind, but its potential is evident from work by sociologists and marketing scholars in areas as diverse as the New York bond market (Abolafia, 1996, 1998), behavior in shopping malls (Underhill, 2001), the Harley-Davidson Owners’ Group (Schouten and McAlexander, 1995), high excitement leisure experiences such as white-water rafting (Arnould and Price, 1993) and skydiving (Celsi et al., 1993), and how the Internet is changing the process of buying a car (Barley, 2015).

## 1.7 Experimental Studies of Behavior

The use of experiments has become widespread in economics in recent years, largely as a result of the pioneering work of Vernon Smith (1991). Behavioral economists

make extensive use of research involving experiments, but their view of the role of experiments and of what constitutes an acceptable experiment is different from that of the conventional experimental economist. There is considerable potential for confusion here, since Smith shared the 2002 Bank of Sweden Prize in Economic Sciences in Memory of Alfred Nobel with psychologist Daniel Kahneman: Smith is not a behavioral economist, whereas Kahneman has had a huge impact on behavioral economics via experiments that did not follow Smith's recipes for how experimental economics should be done. Potential for confusion is increased by Smith's (2008) use of the term "ecological rationality" in a way that differs markedly from its use in behavioral economics via the work of psychologist Gerd Gigerenzer and his colleagues (1999, p. vii). For Gigerenzer, "ecological rationality" pertains to whether the decision-maker is using decision heuristics that "are adapted to the structure of the environment in which they are used." It thus has a similar meaning to Herbert Simon's notion of "procedural rationality" that was outlined in Section 1.3, except that it perhaps does a better job in prompting us to keep in mind the importance of context. But for Smith, "ecological rationality" means a situation in which trial-and-error processes eventually result in a market operating efficiently.

The approach that Vernon Smith pioneered focused on using experiments to find out how markets work. A key feature of his experimental method is the use of significant performance-based financial rewards to motivate research subjects to do the best that they can when acting as players in experimental markets. The setting for such experiments is typically a computer laboratory in which groups of participants can be presented with different "treatments" that enable the impacts of different variables to be assessed, other things equal, in a very strictly controlled manner. In experimental markets, participants can be playing buyer or seller roles, much as in a real-world financial market, but in other experiments the participants are often playing some kind of economic game with some of the other (typically unidentified) participants in their laboratory session.

Behavioral economists often follow Smith's method to test their theories and to test their policy ideas in a laboratory setting. But they are also open to evidence gathered from a much wider range of experimental formats. Most importantly, they take seriously findings of experiments such as those described by Ariely (2008), Kahneman (2011) and Thaler (2015) even where the experiments did not entail the use of performance-based rewards to motivate the participants. Such experiments may involve simple hypothetical choices that entail some kind of gamble, with the focus being on, for example, whether the way the choice is presented to the participants makes a difference to what gets selected. Much of the research that uncovered the "heuristics and biases" to which we will frequently refer later in this book was conducted in this way. In turn, some of the findings became foundations for constructing alternative theories, as in the case of prospect theory (Kahneman and Tversky, 1979).

Behavioral economists are also open to the idea of using experiments that put participants into naturalistic choice environments rather than highly controlled but stripped-down approximations of real choice environments. Different questions may

require different kinds of methods. For example, take the case of choices of mobile (cell) phone connection plans, an area that I have studied with my colleagues Lana Friesen and Christopher Shadforth. A highly stylized experiment was fine for exploring the impact of usage uncertainty and different types of plan formats on the extent to which people waste their money by choosing needlessly expensive plans. We were able to isolate the impacts of these issues in a laboratory setting via an experiment in which the participants only faced choices between seven imaginary plans. They were allowed to make a sequence of twenty choices, with no penalties for switching between plans, over the course of an hour as they attempted to minimize their notional spending on a particular pattern of service usage (see Friesen and Earl, 2015). By contrast, when we wanted to study how people search for good-value plans, and the difference it makes to have access to online market aids such as product comparison websites, our experiment had a naturalistic design: in one treatment we used an offline archive of clones of the actual service providers' websites, and in another treatment we simply allowed participants to search freely on the Internet in their attempts to find the cheapest plan for a particular usage pattern (see Earl, Friesen and Shadforth, 2017).

In line with the pluralistic view that behavioral economists have of the nature of rationality, their experiments do not focus purely on finding relationships between variables of interest and the choices that research subjects make; they are also interested in the routes by which participants in experiments arrive at their choices. Some of their experiments therefore come under the umbrella term "process-tracing analysis." As is evident from the handbook edited by Schulte-Mecklenbeck et al. (2011), process-tracing experiments can range from the kind of work that neuro-economists do – in which brain scanners are used to study what happens in the brain when particular kinds of decisions are being made – through to analyzing transcripts of people "thinking aloud" as they make decisions, a technique known as "verbal protocol analysis" (for the classic handbook on this, see Ericsson and Simon, 1993). A logical extension of the latter method, in experiments that involve subjects working on computers, is to record what they say in thinking aloud as the soundtrack of a screen-capture move of what they do on the computer screen while undertaking the experimental task. This method was used in the Earl et al. (2017, 2019) study of mobile phone plan choices. Before Apple gave the world computers that could make such recordings by using its Quicktime app, Payne et al. (1993) pioneered the use of a software package called MOUSELAB that made it possible to record how research subjects searched for information in a stylized screen environment rather than by using a web browser.

As with research involving the use of interviews and large sample questionnaires, process-tracing research is very resource-hungry. This is because of the huge amount of data that each subject may generate and the need to run protocol sessions on a one-to-one basis so that the administrator of the experiment can provide prompts to "keep talking." Unless data collection is automated in the manner of the studies that used MOUSELAB, the data must be transcribed and coded manually prior to any analysis. This can be incredibly time-consuming: in the study reported in Earl et al. (2017), each of our forty-one participants had an hour to complete the task, so nearly forty-one

hours of videos and their soundtracks had to be painstakingly analyzed. Because of this, nearly three years passed before we had managed to find enough time to finish writing it up. It should thus be no surprise that, whereas economics experiments in computer laboratories often have 100–200 participants spread across various treatment groups, process-tracing experiments often involve 20–100 participants, with the total number tending to be inversely related to the duration of the task. The good news is that even with small samples, statistical analysis is still possible, with the aid of nonparametric techniques.

In an ideal world, behavioral economists involved in policymaking would test the relative efficacy of their policy proposals via field trials in areas that are representative of the wider population to which it is intended to apply them. This is the behavioral economics equivalent of what a firm does when it engages in “test marketing” rather than risking a nationwide launch. Field experiments can be used to trial multiple policies by assigning different policies to different localities, thereby to get a sense of their relative cost-effectiveness. However, field trials may be impossible to organize in some policy contexts, such as where the policy ideas involve the government imposing regulations of one kind or another about how private sector providers of a particular kind of product must present their offers on their websites. Clearly, in such a case, the alternative strategies could not be trialed simultaneously in different regions owing to the providers’ websites being organized to function on a national basis. This problem can be avoided if the policies are simulated in different treatments in a computer laboratory experiment. It was the latter approach that Lana Friesen and I adopted in the context of policies for enhancing mobile phone plan choices. We used a six-treatment experiment to study the relative impacts of three different plan information policies and two training strategies, compared with a baseline, no-intervention treatment (see Friesen and Earl, 2020).

It is important to note that however behavioral economists conduct experiments, they need to use their findings mindful of the replicability crisis that has been going on in scientific research and from which psychology has not been immune (see OSC, 2015; Spellman, 2015; Schimmack, 2018). Given that experimental findings may not be as robust and widely applicable as their proponents have claimed, the wise behavioral economist will look at them cautiously, giving serious thought to whether there are any theoretical bases for taking them seriously in *a priori* terms and to whether and when they seem to “ring true” in terms of everyday experience.

## 1.8 Behavioral Rules and Routines

The picture of real-world decision-makers that behavioral economists have pieced together from the diverse sources considered in the Sections 1.4–1.7 is very different from the imaginary “homo economicus,” who can employ all relevant information to find optimal choices instantaneously. However, it is consistent with Dewey’s (1910) decision cycle perspective on choice and Simon’s (1976) view that the future for economics lies in studying procedural rationality and helping people to take decisions



more efficiently. What behavioral economists have ended up with is a view of humans that is neatly captured by Gigerenzer and Brighton's (2009) notion of "homo heuristicus." People use rules and other simplifying aids to cope with the complex world in which they find themselves. These may be stand-alone aids to choosing, or may be nested together or ordered sequentially, as with decision-making procedures and routines.

A useful analogy here is to think of the mind as being rather like a computer: it comes with some things programmed in from the outset, to which other "apps" can be added. Indeed, we may view the mind as being like a computer that has rules for finding and installing updates to its set of apps by itself, though sometimes it needs external inputs to activate its programs or install additional apps. The heuristics that are hardwired into the human mind can be viewed as constituting human nature insofar as they are shared by the bulk of the population. Other heuristics get installed as a result of the social context in which decision-makers develop, as with the process of nurturing, or are personal creations, tentatively put together by modifying or splicing existing heuristics, and only retained if they seem to work satisfactorily in practice.

Although these heuristic devices are, by definition, supposed to be decision-making aids, not all of them are conducive to good choices. But in acknowledging this, we should not lose sight of the positive role that heuristics play in making life manageable. Indeed, as we will later see (in Section 4.2), if people did not have rules and heuristics at their disposal to call a halt to a variety of "infinite regress" problems that lurk within open-ended choices, they would be prone to suffer from decision paralysis. Unfortunately, the kind of modern behavioral economics that is presented in most textbooks and is typically applied to government and corporate policies by "behavioral insights teams" focuses primarily on seemingly dysfunctional heuristics that are part of human nature. These heuristics are seen as biasing judgments and choices in ways that are contrary to the interests of those who use them. On this line of thinking, humans are, as Ariely (2008) puts it, "predictably irrational." This makes their behavior susceptible to manipulation by firms and governments. However, in principle, people can be taught how to override their inherited fallibility, think more like statisticians and use better heuristics than their less-well-educated counterparts. This latter view underlies self-help behavioral economics books such as Belsky and Gilovich's (1999) *Why Smart People Make Big Money Mistakes and How to Avoid Them* and has become the basis of what is known as the "boost" approach to behavioral public policy (Hertwig, 2017).

In the pluralistic version of behavioral economics that is set out in this book, much attention is of course given to heuristics that compromise the quality of the choices that people make. These dysfunctional heuristics include not merely some that are part of human nature but also others that are not innate and which some members of the population have, by one means or another, come to use. However, we also draw upon the work of behavioral researchers such as Gigerenzer and his colleagues, who see some heuristics very positively, characterizing them as "fast and frugal" tools for making effective choices.

From the latter standpoint, it is natural to focus on differences between people, rather than merely on heuristics that are common to the bulk of the population, in order to find rules that are worth sharing across the entire population. For example, some people possess a set of heuristics that makes them capable of operating in a “streetwise” manner, whereas others lack these heuristics and will consequently be at risk in certain kinds of settings. Those who have especially “fast and frugal” ways of deliberating in a particular context provide benchmarks for procedural or ecological rationality. Their ways of operating may not be the best that humans will ever develop, but they provide exemplars of current best practice. Note here the plural with “exemplars”: when members of a population have somewhat different needs and constraints in a particular area of choice, no single set of heuristics may constitute “the” best-practice way of deliberating.

## 1.9 Computer Simulations

Behavioral economists were very quick to start using computers to model decision-making. Richard Cyert and James March’s (1963) book *A Behavioral Theory of the Firm* is a landmark contribution in this respect, as well as for the theory that it sets out, while Herbert Simon was a major contributor to computing sciences and a pioneer in the field of artificial intelligence. For them, the link between organizations and computing was very straightforward. They saw organizations as operating via decision rules that were often embodied in formal policies and procedures about what should be done in particular situations. Decision processes could therefore be mapped in terms of decision trees involving binary “yes/no” nodes with the direction of the answer to a question then leading, in an “if, then” manner, either to an action or to a further question to consider. Once these maps of decision processes had been constructed, it was an obvious next step to turn them into computer programs and see how well they could predict what the organization would do as its environment changed. Trial-and-error processes or statistical analysis could be used to calibrate the extents of a response to a particular problem (for example, how much a department store would lower its prices if it found its inventories getting “too large” and the point at which it would decide to have a “sale”) and thereby improve the model’s predictive capacity.

Computer simulations play a major role in Gigerenzer et al.’s (1999) research program on “fast and frugal” decision rules, providing a means to test how effectively simple rules work in particular contexts. It has also become common for researchers to develop “multi-agent simulations” to explore what happens in markets populated by a variety of “agents,” each of whom is conceived as a set of decision rules. Groups of these “agents” can be assigned different sets of rules, such as rules for when to buy or sell in response to the latest information about prices. Such models enable the analyst to see, for example, how chaotically a market behaves depending on the types of rules used to make decisions and the distribution of such rules among the population of decision-makers.

## 1.10 Adding the Evolutionary Perspective

This book's approach to behavioral economics is distinctive not merely because it brings together ideas from OBE and NBE but also because it frequently offers an evolutionary perspective on behavior and the functioning of economic systems. The latter has several facets, each of which is underpinned by a Darwinian view of how evolution takes place. This view has three stages. First, some kind of *mutation* occurs in the organism in question. Secondly, there is the *selection* part of the process: if the mutation increases the organism's relative competitive strength, the organism will have a bigger chance of surviving long enough to reproduce, whereas rival organisms will have a reduced chance of doing so. Finally, there is the *retention* part of the process: the mutation is passed on to the next generation if the organism in question breeds. Without the breeding phase, the advantages that the mutation conferred will be lost when the organism that hosted the mutation dies. If the competitive fitness-enhancing mutation is retained down the generations via the breeding process, the population of organisms with the mutation will grow. This will make life harder and harder for other species in the same environment and for members of the same species that lack the fitness-enhancing mutation.

One way this book incorporates this Darwinian perspective is by employing the evolutionary psychology perspective advocated by Cosmides and Tooby (1994) and Cohen and Dickens (2002). This entails trying to understand modern behavior by examining what would have conferred evolutionary advantages on early hunter-gatherers. Central to evolutionary psychology is the idea that modern humans should be viewed as if they have a genetic endowment that is not significantly different from that of their hunter-gatherer ancestors. The basis for this is that, in terms of evolutionary time, modern humans are merely an eyeblink away from early members of the *Homo* genus who colonized much of the world and from whom *Homo sapiens* eventually emerged as the dominant species. The hunter-gatherer period is viewed as the only one in human history that is long enough for evolutionary processes to have had enough time to select genes that were especially conducive to survival and reproduction in a particular environment. Hence, if the evolutionary psychology perspective is correct, modern humans must be coping with their choice environment by deploying, or building upon, whatever they have inherited from, and which conferred evolutionary advantages on, ancient hunter-gatherers.

The evolutionary psychology perspective has potential to help us explain why, for example, modern consumers are susceptible to obesity via excessive consumption of food that contains a high proportion of fat and sugar. Our hunter-gatherer ancestors faced an environment in which their access to food was highly variable. This meant that they needed to have calorific reserves to call upon when fresh food was in short supply. Their survival chances would thus have been enhanced if they happened to have a genetic preference for sweet, fatty foods that could replenish their calorific reserves. However, because their access to food varied a lot, their reserves did not accumulate in the long run and hence did not compromise their abilities to reproduce and rear children to adulthood. Those who did not favor such foods would have failed

to build up these reserves and would have been more vulnerable and less likely to pass on their genes. A genetic preference for these foods thereby got passed to the present day. However, today's affluent humans can eat regularly and have ready access to the kind of junk food that helps them build up calorific reserves way beyond what they need (see further, Brooks, 2011; Burnham and Phelps, 2019). Evolutionary processes have not yet had enough time to select a population without such dysfunctional preferences.

The evolutionary psychology perspective implies that behavioral economists should perhaps reflect more critically about "heuristics and biases" than they have normally tended to do. If the heuristics that make humans "predictably irrational" are hardwired via the genes that modern humans have inherited, then we may be wise to reflect on how these heuristics might have been retained because they enhanced the competitive fitness of early humans. In some contexts, the ways in which they were of benefit to early humans might still apply today. We will be on the lookout for such contexts as this book proceeds.

In addition to focusing on the selection of genes in competitive environments, the behavioral economist can consider how evolutionary selection takes place with respect to rules and routines. This is what today's evolutionary economists do, much influenced by the seminal work of Nelson and Winter (1982). In contrast to the biological view of evolution, this perspective sees evolutionary change as being initiated by innovative thinking rather than any random mutation of rules or routines. This perspective brings together ideas from the behavioral economics of the 1950s and 1960s and merges them with the "creative destruction" view of capitalism offered by Joseph Schumpeter (1943), a view that focuses on technological competition rather than price competition. In contrast to "as if" theories of the firm that tend to assume firms are identical, the evolutionary approach sees firms as differing in the knowledge, rules and routines that they use when competing.

Firms with operating systems that are better suited to winning customers will enjoy growing market shares. Their ways of doing business will become more and more widespread as they build on their success by growing their existing operations and/or by opening new factories and branches that they operate in the same way. Their success will come at the expense of their rivals. Their ways of doing business may also spread due to rivals copying them. The global spread of franchising as a business model provides a good example of these processes. Franchising is not merely a means by which pioneers of franchise systems were able to grow the geographical presence of their brands and achieve economies in purchasing inputs and promoting their products; it is also a system that other entrepreneurs have copied and applied to a wider and wider range of products and services. However, there is no guarantee that the operating systems that survived and grew in one period will have what it takes to continue to do so if the competitive environment changes.

What applies for rival business organizations is also relevant for understanding cultural evolution. Social groups with ways of thinking and choosing that give them advantages over other groups that think and choose in different ways will prosper and have a bigger chance of passing their operating systems on to successive generations

via social nurturing processes, even if these heuristics are not embedded in genes. These considerations help, too, if we are trying to understand the historical path taken by academic disciplines and schools of thought. For a particular view of behavioral economics to flourish, its core ideas need to be passed from generation to generation. This may be impossible if the proponents of these ideas cannot obtain academic posts that enable them to develop their ideas and teach them, and/or if they cannot attract postgraduates with the capacity to pick up their ideas, extend them and pass them on to the next generation. Difficulties that they face in these respects may be ones that they understand and would even be able to correct if they were prepared to operate differently. Yet, “on principle,” they may opt not to make the changes necessary to ensure a bigger legacy, for such changes may compromise the form that their legacy takes: they may prefer to accept the costs of being able to say, “I did it my way.”

The evolutionary perspective begs the question of what determines the fitness of an organism or way of operating and hence whether it can prosper and grow, or at least have a niche within which it can survive. Over many years, I have sought to address this question by examining what limits substitution and what confers resilience as conditions change in the external environment. My conclusions repeatedly ended up dwelling on matters of structure, i.e., on how things are connected, either in our heads or as elements of our lifestyles and the strategies of the organizations at which we work. However, I did not know that I was thinking about the economy in terms of what is known as a “complex systems” perspective, until I had the pleasure of supervising Jason Potts’s doctoral dissertation (published in 2000 in slightly expanded form as *The New Evolutionary Microeconomics*, for which Potts was a corecipient of that year’s Schumpeter Prize). Modern evolutionary economists have enthusiastically embraced this perspective, but it deserves also to be an important part of a behavioral approach to economics. On this way of thinking, the structural architecture of a system affects its adaptability. As Potts showed (*ibid.*, especially chapters 2–5), it is a way of thinking that is at odds with conventional economic theorizing but, as we will see, it provides a powerful means of understanding why some ways of thinking and behaving are particularly conducive to survival, happiness and prosperity, whereas others result in life being much more of a struggle than it needs to be.

## 1.11 Outline of the Rest of this Book

The behavioral approach to economics that is assembled in this book can be summarized in a single paragraph. It is a way of doing economic analysis that takes account of what we can learn from psychology, introspection, informal sources and systematic research, about how people try – sometimes remarkably effectively, sometimes ineptly – to cope with challenges that are an inherent part of life. The choice environment and human cognitive limitations inhibit the discovery of optimal courses of action and prevent decision-makers, and the economy in general, from settling into a state of equilibrium. A behavioral economist is not prepared to theorize “as if” these

challenges do not exist by assuming decision-making environments to be simple and static or by assuming decision-makers have all the capabilities they need to handle them effortlessly.

In the chapters that follow, we apply this view both to consumer behavior and the behavior of organizations, as well as considering its macroeconomic implications. In contrast to the conventional economist's strategy of viewing all actions as being motivated by a desire to maximize "utility," Chapter 2 offers a multifaceted examination of what motivates people to do what they do. Instead of assuming some kind of representative "utility function" with a particular simple mathematical form, the chapter ends by emphasizing that individuals differ in their mixes of motivations and it sets out techniques for uncovering how people see means–ends relationships between the things among which they choose and the goals they try to pursue.

In Chapters 3–8, we use Dewey's decision cycle framework to examine how people decide they have a problem to solve and figure out what to do about it. However, these five chapters do not follow what might seem the obvious sequence of (a) problem recognition, (b) search for solutions, (c) evaluation of options, (d) choice and decision implementation and (e) hindsight review. There are good reasons why I opted not to follow this sequence but working out which sequence to adopt instead was far from straightforward, for reasons I will now explain.

Because decision-making may entail a looping process, with hindsight review leading to recognition that there is still a problem, stages (a) and (e) need to be considered together and it may not even be a good strategy to begin by considering problem recognition and hindsight review jointly and proceed from there, via analysis of the search and evaluation stages, to an analysis of choice. Indeed, this structure would have run the risk that, if traditional economists read this book, they would end up viewing the analysis as assuming, as they would normally do, that the result of choice is a state of equilibrium. My intention is to present a view of human action in which problems frequently do not get completely eliminated and intended solutions often beget new problems. Given this, there is a case for putting problem recognition at the end of this block of chapters and to begin instead by analyzing search behavior on the presumption that a problem has already been recognized.

Such a structure might also appear to have advantages when it comes to understanding how problems arise and how they come to be recognized. Problems are personal constructs: problem recognition entails deciding that we have a problem and what its nature is. This is itself a problem that may necessitate a search for possible explanations of what may be going on, followed by their assessment, before we reach a verdict about what the trouble is and hence what kind of a solution we need to find. Problem recognition is thus inherently bound up with the issues that comprise the other stages of a decision cycle, ensuring that a decision cycle in effect consists of a set of interlocking sub-cycles.

Alternative sequences run into the same issue whereby making sense of one stage of the decision cycle is best done with an appreciation of what happens in other stages. Rival search strategies must be evaluated and choices made between them. Evaluation entails a search (including in one's mind) for possible ways of construing what one is

looking at, followed, if there are multiple contenders, by a choice of which view to take. The choice stage may require a search for possible ways of choosing, and assessment of them, with the rejection of options that seem problematic begging the question of how their problems are recognized as such. What we have, then, is a tangled web (cf. Hofstadter, 1979); any strategy for analyzing decision cycles in a linear way entails an arbitrary choice about where to begin.

After spending much time experimenting with different sequences of material, I ended up with a structure that minimized the need to flag topics as being discussed further – in particular later sections – because it enabled me earlier to introduce key themes and concepts that crop up repeatedly in later chapters. This structure opens a bigger can of worms at an early stage than some other structures did, but it does so in a way that does not require them all to be dealt with comprehensively on the spot. It proceeds as follows.

Chapter 3 examines in detail, and with the aid of the complex systems perspective, why life tends to be more like a relentless sequence of problem-solving episodes than mainly a steady state or the smooth unfolding of a planned growth strategy. Chapter 4 addresses the process of cognition in respect of both how people come to know they have a problem and how they size up their options for solving it. Chapter 5 examines how they deal with uncertainty when they are trying to form their expectations. Chapters 4 and 5 largely ignore the question of how decision-makers come to have the information they use as a basis for their assessments. However, Chapter 6 focuses on the behavioral economics of searching for solutions to problems whose existence has been acknowledged. Chapter 7 examines the origins of relative valuations that we assign to alternative courses of action, i.e., what determines which ends decision-makers pursue. It revisits some of the issues explored in Chapters 3 and 4, doing so from a complex systems perspective. The ideas from this chapter are then developed further in Chapter 8, where we examine, finally, how choices are made. From Chapters 7 and 8, we will see how emotional factors and the rules around which we build our lives affect the extent to which we become attached to, or are keen to avoid, particular products and activities. Here we see that there is much more than the issue of whether the “price is right” to understanding whether or not people are open to changing their behavior and that it is not the case that “everyone has their price.”

By the end of Chapter 8, we will have covered all the stages in a decision cycle. However, before moving on to Chapter 9’s examination of how firms and governments can employ insights from behavioral economics to try to influence our behavior, it may be useful to revisit Chapter 4 to get a sense of having completed a full decision cycle loop. Indeed, because of the challenges of presenting a linear account of a decision cycle, the ideal thing to do is to return to Chapter 4 and read (or at least skim through) again from there through to the end of Chapter 8.

Chapters 10 and 11 focus on what used to be the heartland of behavioral economics, namely the behavior of firms and other organizations. In these two chapters, we focus particularly on learning and the determinants of how bold firms are in approving investment decisions, as well as on the challenges of getting a firm to function as a team. Chapter 10 is concerned with factors that affect organizational productivity.

Unlike a conventional profit-maximizing view of the firm, it takes seriously the impact of managerial operating and leadership styles and internal politics rather than presuming that organizations generally adjust swiftly to changes in knowledge about what constitutes “best-practice” methods. It ends with an examination of the challenges of implementing revolutionary change when an organization is struggling to survive. Chapter 11 picks up from there to consider how the competitive process plays out as a never-ending innovation-driven battle between firms. It focuses mainly on choices that firms make in relation to their external environments and how these choices are affected by learning processes within firms and populations of potential customers. What emerges includes a distinctive behavioral/evolutionary view of supply curves and pricing. Although it is only these two chapters that focus on firms and organizations, it should be noted that earlier chapters sometimes use illustrative material regarding choices in the workplace rather than merely giving examples that refer to consumer behavior.

The last two chapters of the book take us into the territory of behavioral macroeconomics. Chapter 12 focuses particularly on the role of confidence as a driver of aggregate demand in affluent economies and on the behavioral foundations of business cycles. Once again, the complex systems perspective proves to be useful – this time in relation to the resilience of the financial system as people experiment with new financial instruments. Finally, Chapter 13 explores the question of whether humanity’s consumption of natural resources can be scaled back, to reduce its impact on the environment, without necessarily reducing how happy people are and how fulfilling they find their lives to be. This is a complex issue that takes us into the territory of both “ecological economics” and what has become increasingly known as “happiness economics.” However, it turns out that there is a lot we can say about it even if we draw mainly upon material from earlier chapters of this book.