THE BIAS THAT DIVIDES US

THE SCIENCE AND POLITICS OF MYSIDE THINKING

KEITH E. STANOVICH

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Keith E. Stanovich

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For Paula,
you were with me, my love,
every step of the way

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Preface

In the wake of the 2016 presidential election, there was widespread concern about the accuracy of information available to voters about the issues and the candidates. There were debates about how much "fake news" had affected the election, and there was widespread concern about biased news reporting and censoring by the arbiters of social media. People from both ends of the ideological spectrum thought that the media had failed to present information in an unbiased manner. A polarized electorate seemed to be looking at the world from diametrically opposed perspectives. The cover of *Time* magazine on April 3, 2017, carried the title "Is Truth Dead?" There were many essays and op-eds lamenting that we had become a "post-truth" society, a term that the editors of the Oxford dictionaries had named as the word of the year for 2016.

Despite its popularity, I will not be employing the term post-truth in this volume because it is too often taken to imply that our current society fails to *value* the truth. The crux of our current societal dilemma, however, is not that we have come to disregard the truth or become cavalier toward it, but that we are *selective* in displaying our post-truth tendencies. Neither side in the political debate thinks that everything in society is post-truth. What we do believe is that our political *enemies* are post-truth. We don't think that all the news we see in the media is fake news—only the news that emanates from our political opponents. We believe in *our* truth, in *our* news. We do value truth and facts—but only when they support our views.

What our society is really suffering from is *myside bias*: we evaluate evidence, generate evidence, and test hypotheses in a manner biased toward our own prior beliefs, opinions, and attitudes. We are not living in a post-truth society—we are living in a myside society. Our political peril stems from

our inability to *converge* on commonly accepted facts and truth, not from our inability to value or respect facts and truth. In scientific practice, there are mechanisms for converging on the truth—things like publicly agreed upon operational definitions. In real life, however, we tend to define concepts with a myside bias, and this tendency ensures that evidence will not lead to convergence, as it does in science.

That we are facing a myside bias problem and not a calamitous abandonment of the concept of truth is good news in at least one sense: the phenomenon of myside bias has been extensively studied in cognitive science. Understanding it may help to alleviate our present scourge of political divisiveness.

Introducing readers to some of the paradigms used to study myside bias, chapter 1 will demonstrate how behavioral scientists from various disciplines have studied this bias in the lab. We will see that myside bias is ubiquitous—indeed, one of the most universal biases that has been studied. Chapter 2 will deal with the vexing question of whether myside bias, for all the negative effects it seems to have, should really be considered a reasoning error or whether it has some rational justification.

Although psychologists have studied a considerable number of thinking biases, myside bias stands out as unusual in several respects. Chapter 3 will discuss how most biases that have been studied can be predicted from various cognitive abilities (intelligence and executive function measures, for example) and from thinking dispositions related to rationality. In contrast, however, myside bias is *not* predictable from standard measures of cognitive and behavioral functioning. Furthermore, it has very little domain generality: myside bias in one domain is not a very good predictor of myside bias in another. As one of the most unpredictable of the biases in an individual difference sense, myside bias is thus an outlier bias—and that has important social, political, and psychological consequences.

For one, to study it, we need a different type of model—one that does not connect this bias to the traditional types of cognitive abilities and personality traits that psychologists study. Chapter 4 will argue that models focusing on the properties of acquired beliefs rather than cognitive processes provide better frameworks for the study of myside bias.

And because myside bias is not predictable from traditional psychological measures, chapter 5 will explain how it creates a true blind spot among cognitive elites. Cognitive elites (those high in intelligence, executive functioning,

or other valued psychological dispositions) often predict that they themselves are less biased than other people when queried about other well-known psychological biases (overconfidence bias, omission bias, hindsight bias, anchoring bias). They are often correct in their predictions because cognitive sophistication is moderately correlated with the ability to avoid most of the biases that have been studied. But because myside bias is an exception, an outlier, it is the bias where the cognitive elites most often think they are unbiased when in fact they are just as biased as everyone else.

In chapter 6, I explore how this bias blind spot contributes to the ideological polarization of our current politics and to a troubling new trend: the decline of trust in university research as a disinterested arbiter of pressing social issues. I will discuss what can be done to stem the effects of the kinds of myside biases that have led to our poisonous politics and that interfere with our ability to unify as a nation.

Acknowledgments

Throughout the first decade of this century, my research group published a series of papers on myside bias (Macpherson and Stanovich 2007; Stanovich and West 2007, 2008a; Toplak and Stanovich 2003) that each contained a surprising finding: myside bias was not attenuated by cognitive ability. In "Myside Bias, Rational Thinking, and Intelligence" (Stanovich, West, and Toplak 2013), we summarized these converging results, highlighting the unusual individual difference findings. In many heuristics and biases tasks, including ones seemingly similar to myside reasoning paradigms such as belief bias tasks, subjects of higher ability are better able to avoid the bias. In our 2013 paper, we provided a preliminary theoretical context for understanding our curious findings regarding myside bias. *The Bias That Divides Us* fleshes out in considerable detail our theoretical understanding of why myside bias may act differently than other biases reported in the heuristics and biases literature—particularly as regards individual differences.

In our 2013 paper, the social implications of a bias operating independently of cognitive sophistication went unexplored. As described in greater detail in chapter 5 of this volume, the political implications of our blindness to our own myside bias became apparent to me only after the publication of *The Rationality Quotient* (Stanovich, West, and Toplak 2016). Those sociopolitical implications are now explicitly discussed in the chapters to follow.

Although *The Bias That Divides Us* was written without grant support, my laboratory's earlier empirical work on myside bias received welcome support from grants given by the John Templeton Foundation to Keith E. Stanovich and Richard F. West; by the Social Sciences and Humanities Research Council of Canada and by the Canada Research Chairs program

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My thanks to Phil Laughlin, my editor at the MIT Press, whose help with this and previous books has made him a key participant in my laboratory's scientific achievements, for his enthusiastic support of the present project from the very beginning; to Alex Hoopes and Elizabeth Agresta for guidance during the book's production process; to Jeffrey Lockridge for extremely thorough, conscientious, and insightful copyediting; to the three anonymous reviewers secured by Phil who provided extensive and incisive reactions to an outline and proposed structure for the book; to Maggie Toplak and Jonathan Evans for their erudite feedback on the entire manuscript; and to Richard West and Anne Cunningham who spent considerable time with an earlier draft.

But my true Maxwell Perkins for this book was my wife, Paula, who was there at its inception and who edited every chapter and verse. More than halfway into the drafting of the book, in early fall of 2019, Paula was diagnosed with multiple serious heart conditions. The stress of the resulting extensive open-heart surgery she endured was greatly mitigated by the Stanovich support team of Tom Hagen and Wanda Auger on the days surrounding the surgery and Anne Cunningham on Paula's first days home from the hospital. Invaluable members of the Stanovich support team also included Marilyn Kertoy (as always) and Terry Needham; Sue Bert and Jack Buddeke; and Di Rosenblum and Mark Mitshkun. Thanks also to Gary and Mike Carson for their support. After the surgery, Paula and I healed together and continued to write and edit together. Paula had just begun her cardiac rehabilitation program at the hospital when we heard news of a very bad virus coming out of China. Within a few weeks, we were isolated at home. Under lockdown, I worked on the book with Paula's able assistance until it was finally finished, and it, as is my life, is dedicated to her.

1 The Many Faces of Myside Bias

Myside bias occurs across a wide variety of judgment domains. It is displayed by people in all demographic groups, and it is exhibited even by expert reasoners, the highly educated, and the highly intelligent. It has been demonstrated in research studies across a variety of disciplines, including: cognitive psychology (Edwards and Smith 1996; Toplak and Stanovich 2003), social psychology (Ditto et al. 2019a), political science (Taber and Lodge 2006), behavioral economics (Babcock et al. 1995), legal studies (Kahan, Hoffman, et al. 2012), cognitive neuroscience (Westen et al. 2006), and in the informal reasoning literature (Kuhn and Modrek 2018). Myside bias has been found to occur in every stage of information processing. That is, studies have shown a tendency toward biased search for evidence, biased evaluation of evidence, biased assimilation of evidence, biased memory of outcomes, and biased evidence generation (Bolsen and Palm 2020; Clark et al. 2019; Ditto et al. 2019a; Epley and Gilovich 2016; Hart et al. 2009; Mercier and Sperber 2017; Taber and Lodge 2006).

Table 1.1 presents a sampling of myside studies using different paradigms, along with representative citations. Taken collectively, the studies in the table show that myside bias has been displayed in a wide variety of paradigms. This opening chapter will begin by illustrating some of the most easily understandable paradigms—ones that are more like demonstrations—and will then introduce studies that are more technically sophisticated.

One of the most cited demonstrations of myside bias is also one of the oldest. In a classic study, Albert Hastorf and Hadley Cantril (1954) used as a stimulus the film of a notorious football game played by Princeton and Dartmouth in 1951. It was the last game of the year. Princeton was undefeated and featured on its team an All-American player who had been on

Table 1.1
Different Myside Bias Paradigms and Representative Studies of Each Type

Myside bias paradigms	Example studies
Evaluating acts more favorably when they support one's group	Claassen and Ensley 2016; Kahan, Hoffman, et al. 2012; Kopko et al. 2011
Evaluating quality of hypothetical experiments	Lord, Ross, and Lepper 1979; Munro and Ditto 1997; Drummond and Fischhoff 2019
Evaluating quality of informal arguments	Baron 1995; Edwards and Smith 1996; Stanovich and West 1997, 2008a; Taber and Lodge 2006
Applying logical rules better when logical conclusion supports one's strongly held beliefs	Feather 1964; Gampa et al. 2019
Searching or selecting information sources that are likely to support one's position	Hart et al. 2009; Taber and Lodge 2006
Generating arguments	Macpherson and Stanovich 2007; Perkins 1985; Toplak and Stanovich 2003
Covariation detection	Kahan et al. 2017; Stanovich and West 1998b; Washburn and Skitka 2018
Contradiction detection	Westen et al. 2006
De-emphasizing costs of one's moral commitments	Liu and Ditto 2013
Distorting perception of risk and reward in direction of one's preferences	Finucane et al. 2000; Stanovich and West 2008b
Selective use of moral principles	Uhlmann et al. 2009; Voelkel and Brandt 2019
Essay evaluation	Miller, et al. 1993
Written argumentation	Wolfe and Britt 2008
Political approval ratings	Lebo and Cassino 2007
Selectively learning facts favorable to one's political party	Jerit and Barabas 2012
Conditional probability evaluation	Van Boven et al. 2019
Fairness judgments	Babcock et al. 1995; Messick and Sentis 1979
Resisting evidence when it will lead to unwanted societal changes	Campbell and Kay 2014
Interpreting facts in a way favorable to one's group	Stanovich and West 2007, 2008a
Selectively questioning scientific status of evidence	Munro 2010
Four-card selection task	Dawson, Gilovich, and Regan 2002
Inconsistent political judgments	Crawford, Kay, and Duke 2015
Biased perceptions of media reports	Vallone, Ross, and Lepper 1985

the cover of *Time* magazine. The game turned out to be a brutal one, with a large number of penalties and several broken bones. The star player from Princeton left the game before halftime with a broken nose. The game was the subject of controversy, and the student newspapers of each school lamented the poor sportsmanship of the other team.

Hastorf and Cantril (1954) showed the same film of the game to a group of Dartmouth students and to a group of Princeton students and asked them to mark on a piece of paper each time they saw an infraction of the rules. The Dartmouth students reported that an equal number of infractions were committed by both teams (in fact, in the actual game, Dartmouth had committed a greater number), whereas the Princeton students estimated that the Dartmouth team had committed 70 percent of the infractions overall. Of course, in a study this old, the types of carefully controlled conditions that we now take for granted in psychological research were not present. Nevertheless, the study is a classic in showing how people can see the same stimulus and yet interpret it in different ways based on their relationship to the situation (i.e., what "side" they are on). Hastorf and Cantril (1954) themselves made this point by using an ironic title for their study: "They Saw a Game"—drawing attention to the fact that, actually, the subjects had "seen" *different* games based on their relationship to the two opposing teams.

Although the Hastorf and Cantril 1954 study lacked the methodological rigor now expected of such studies, half a century later, Dan Kahan, David Hoffman, and colleagues (2012) were able to replicate the earlier finding with thoroughly modern controls by showing their subjects a film of a protest that had taken place in Cambridge, Massachusetts, in 2009. From the film, it is impossible to tell who the protesters are or what the protest was about—it occurs outside an unidentified building. All that is really discernible is that there is a clash between the protesters and the police in front of the building. The subjects were told that the protesters had been ordered to disperse by the police and were suing the police for doing so. Unlike the Hastorf and Cantril 1954 study, the Kahan, Hoffman, and colleagues 2012 study contained an experimental manipulation: half of the subjects were told that the demonstrators were protesting against the availability of abortion in a reproductive health care center and the other half were told that the protesters were demonstrating outside a military recruiting center against the military's then-existing ban on service by openly gay soldiers.

Kahan, Hoffman, and colleagues (2012) also used assessments of a variety of multidimensional political attitudes, making it possible to assess whether subjects with conservative social attitudes and those with liberal social attitudes[1] assessed the very same protest differently depending on the target of the protest. In fact, the labeling of the protest made an enormous difference in how the two groups of subjects interpreted the clash between the police and the protesters. In the abortion clinic condition, 70 percent of the socially conservative subjects thought that the police had violated the demonstrators' rights, but only 28 percent of the socially liberal subjects thought that they had. The pattern of responses was completely reversed in the condition that was described to the subjects as a protest against restrictions on gay members serving in the military; only 16 percent of the socially conservative subjects thought that the protesters' rights were being violated, whereas 76 percent of the socially liberal subjects thought that they were. The results show why the title to the Kahan, Hoffman, and colleagues 2012 study echoed that of the Hastorf and Cantril 1954 study. "'They Saw a Protest'" refers to the fact that the very same protest—just like the very same football game decades before—was "seen" differently depending upon what side the observers were on.

The Terminology Confusion: "Confirmation Bias," "Belief Bias," and "Myside Bias"

Before we move on to consider some additional myside paradigms and studies, it is important to clarify the terminology used in this domain because it is quite confusing. The three terms "confirmation bias," "belief bias," and "myside bias" are used in a highly inconsistent manner in the scientific literature. The term "confirmation bias" is the most popular term used in the general media; indeed, Google Trends confirms that "confirmation bias" is a vastly more common term than "belief bias" or "myside bias." However, because it is the most confused of all the terms, I will restrict my use of "confirmation bias" in this book to one carefully defined sense. Indeed, as long ago as 1983, two distinguished psychologists, Baruch Fischhoff and Ruth Beyth-Marom (1983), investigating hypothesis testing recommended that the term "confirmation bias" be retired because even then it had already become a catchall phrase incorporating too many different effects. Unfortunately, their recommendation was not adopted, and so a decade

later another theorist, Joshua Klayman (1995), expressed his exasperation with the term—saying that there seemed to be as many definitions of confirmation bias as there were studies of it.

The basic problem is that too many different processing tendencies have been swept up into the term confirmation bias, and many of them are not indicators of the type of motivated cognition that underlies true myside bias (Evans 1989; Fischhoff and Beyth-Marom 1983; Hahn and Harris 2014; Klayman and Ha 1987; Nickerson 1998). In his nuanced 1995 paper, Klayman discusses two different definitions of confirmation bias; he calls his first definition the positive test strategy, and this definition is the one I am reserving for the term confirmation bias. A positive test strategy looks for evidence that is expected, given the focal hypothesis in a reasoner's mind. As long as the reasoner deals appropriately with disconfirming evidence, there is nothing nonnormative about a positive test strategy (see Baron 1985; Klayman and Ha 1987; McKenzie 2004; Mercier 2017; Oaksford and Chater 1994, 2003). Klayman's second definition focuses on the psychological disinclination to abandon a currently favored hypothesis and views this type of confirmation bias as a form of motivated cognition (Bolsen and Palm 2020; Kunda 1990). Because I want to emphasize Klayman's (1995) motivated processing category in *The Bias That Divides Us*, I am reserving a separate term—"myside bias"—for this second type of confirmation bias.

To reiterate, I will use the term confirmation bias to refer to the cognitive process of centering the evaluation and testing of evidence on the focal hypothesis.[2] It is not necessarily irrational or nonnormative[3] for a reasoner to display a confirmation bias as long as the reasoner is willing to correctly process the implications of disconfirming evidence when the reasoner encounters it—a point that has been known for quite some time (Baron 1985; Klayman 1995; Klayman and Ha 1987). That is, as long as a reasoner shows appropriate Bayesian updating when encountering disconfirming evidence,[4] seeking tests of the focal hypothesis that the reasoner has in mind is not inappropriate (McKenzie 2004).

That confirmation bias, defined in this manner, does not mean a reasoning error in this case highlights two different senses of the term "bias" in the reasoning literature. The first, evaluatively neutral sense of "bias" simply connotes a processing tendency—"I have a bias to shop at Costco when I'm trying to save money," for example. My use of the term confirmation

bias is of this, evaluatively neutral, type.[5] Klayman (1995) distinguishes this first sense of "bias" from a second, very different one, where "bias" refers to a fundamentally flawed reasoning process that often leads to a thinking error. Whether myside bias, as I identify it here, is a bias in the sense of a reasoning error that results from fundamentally flawed thinking will be the subject of chapter 2.

Unlike confirmation bias as I have narrowly defined it, the term "belief bias," used primarily in the syllogistic reasoning literature, is a term that *does* tend to connote a reasoning error. Belief bias occurs when we have difficulty evaluating conclusions that conflict with what we know about the world (Evans 2017). It is most often assessed with syllogistic reasoning tasks in which the believability of the conclusion conflicts with logical validity. Consider the following syllogism and ask yourself if it is valid—whether the conclusion follows logically from the two premises:

Premise 1: All living things need water,

Premise 2: Roses need water,

Therefore roses are living things.

Judge the conclusion as either logically valid or invalid before reading on.

If you are like the approximately 70 percent of university students who have been given this syllogism to evaluate, you will judge the conclusion valid. And if you did think that it was valid, like those 70 percent who did, you would be wrong. Premise 1 says that all living things need water, not that all things that need water are living things. So just because roses need water, it does not follow from premise 1 that roses are living things. If that is still not clear, it will probably become clear after you consider the next syllogism with exactly the same structure:

Premise 1: All insects need oxygen,

Premise 2: Mice need oxygen,

Therefore mice are insects.

Now it seems pretty clear that the conclusion does not follow from the premises. The same thing that made the rose syllogism so hard to evaluate makes the mice syllogism easy.

In both of these syllogisms, prior knowledge about the nature of the world (that roses are living things and that mice are not insects) becomes

implicated in a type of judgment that is supposed to be independent of content: a judgment of logical validity. In the rose syllogism, prior knowledge was interfering with your arriving at the correct answer. Even if you answered it correctly, you no doubt felt the conflict. In the mice syllogism, prior knowledge helped you answer correctly. Although belief bias has been most extensively studied in the syllogistic reasoning and conditional reasoning literatures (Evans 2017), it is observed in other paradigms as well (Levin, Wasserman, and Kao 1993; Stanovich and West 1997, 1998b; Thompson and Evans 2012).

Belief bias is not the same as myside bias: belief bias occurs when our real-world knowledge interferes with our reasoning performance, whereas myside bias occurs when we search for and interpret evidence in a manner that tends to favor the hypothesis we *want* to be true (Mercier 2017; Stanovich, West, and Toplak 2013). What turns a belief bias into a myside bias? Myside bias refers to processing in favor of existing opinions that are currently *highly valued*. To use a distinction discussed years ago by Robert Abelson (1988), myside bias concerns the beliefs that we hold with high *conviction*. And, unlike more typical beliefs, convictions are accompanied by emotional commitment and ego preoccupation and tend to have undergone more cognitive elaboration (Abelson 1988; see Fazio 2007; Howe and Krosnick 2017 for more contemporary discussions). Linda Skitka, Christopher Bauman, and Edward Sargis (2005) found that attitudes rooted in moral mandates tended to become convictions that were especially potent predictors of outcome variables (social distance, goodwill, and so on).

To illustrate the difference between a simple belief and a conviction, imagine you were on another planet, called "Zircan" but otherwise almost exactly like Earth, and you heard from someone there that roses were never red but were always brown. You would have no trouble acquiring that belief. You would feel no urge to argue with anyone that roses could be red. On planet Zircan, they simply weren't red, and you would have no trouble giving up the belief that roses could be red. On the other hand, if you were to hear that, on planet Zircan, it was believed that left-handed people were morally inferior to right-handed people, you would not accept that belief and in fact would try to argue against it. You would defend your belief that the moral worth of human beings did not depend on whether they were left-handed or right-handed. That belief would be a conviction for you in a way that the belief that roses could be red would not be.

Convictions often derive from worldviews that spawn "protected values"—those which resist trade-offs with other values (Baron and Spranca 1997). Protected values (sometimes termed "sacred values"; see Ditto, Liu, and Wojcik 2012; Tetlock 2003) are viewed as moral obligations that arise from rules that govern which actions are morally required, forbidden, or permitted, and the thought of violating them often provokes anger. Experiments have shown that subjects are reluctant to engage in monetary trade-offs when protected values are at stake (Baron and Leshner 2000; Bartels and Medin 2007) A belief that is a protected value will not be easily altered by evidence.

In further writings on the idea that some beliefs can become convictions, Robert Abelson (1986; see also Abelson and Prentice 1989) makes the distinction between what he calls "testable beliefs" and "distal beliefs." *Testable* beliefs are closely tied to the real world and the words we use to describe that world (e.g., Roses are red). They can be verified by observations—sometimes easily made personal observations, but other times observations that rely on the expertise of others and the more sophisticated methods of science. In contrast, *distal* beliefs cannot be directly verified by experience, nor can they be easily confirmed by turning to experts or scientific consensus. For example, you may think that pharmaceutical companies make excessive profits, or that your state should spend more on mental health and less on green initiatives. Certainly, economic statistics and public policy facts might *condition* distal beliefs such as these (either strengthening or weakening your attachment to them), but they cannot *verify* your distal beliefs in the same manner that they can verify your testable ones. Many distal beliefs embody our values. When they do, they are apt to become convictions because they will lead to emotional commitment and ego preoccupation, as argued by Abelson (1988). Distal beliefs often derive from our general worldviews or, in politics, from our ideologies.

Myside bias centers on distal beliefs, not testable ones. Belief bias, in contrast, centers on testable beliefs. This is why belief bias is more remediable by education and more correlated with cognitive ability than myside bias is (as will be discussed in subsequent chapters). The belief that health care spending is the second largest item in the US federal budget is a testable belief, whereas the belief that Americans spend too much on health care is a distal belief. Certainly, economic facts might alter our attitude toward the latter belief, but they cannot *verify* this distal belief in the same

way they can verify our testable beliefs. The myside bias studies discussed in this book will be almost exclusively about distal beliefs—those which arise from beliefs held with conviction.[6]

To summarize the terminological distinctions as they will be made in *The Bias That Divides Us*: I am calling "confirmation bias" the bias toward looking for positive tests of the hypotheses that are focal in our minds, and "belief bias," the bias that occurs when we have difficulty evaluating conclusions that conflict with what we know about the world. The conclusions that interfere with reasoning in the case of belief bias are testable beliefs. And I am calling "myside bias" the bias that occurs when we evaluate evidence, generate evidence, and test hypotheses in a manner favorable toward our prior opinions and attitudes—where the attitudes in question are convictions (that is, distal beliefs and worldviews to which we show emotional commitment and ego preoccupation). Finally, in this book, I will separate the literature on myside bias from the literature on wishful thinking (Bar-Hillel, Budescu, and Amor 2008; Ditto and Lopez 1992; Lench and Ditto 2008; Weinstein 1980) by dealing only with the former.[7]

Demonstrations of Myside Bias across Paradigms and Types of Thinking

The classic Hastorf and Cantril 1954 study and the follow-up 2012 study by Kahan, Hoffman, and colleagues give a flavor of one type of myside bias, where people evaluate ambiguous acts more favorably when they support their own groups. As you can see in table 1.1, however, myside bias has been demonstrated in a variety of ways using different paradigms that assess many different stages of information processing.

One of the more easily explained demonstrations comes from my lab's work. Several years ago, my colleague Richard West and I presented one group of subjects (university students in the United States) with the following thought problem (see Stanovich and West 2008b for details): First, they were told that, according to a comprehensive study by the US Department of Transportation, a particular German car was eight times more likely than a typical family car was to kill occupants of another car in a crash, and the department was considering a ban on the sale of this German car in the United States. Then they were asked whether they thought that any action should be taken regarding this German car. We found that 78.4 percent of the subjects thought the German car should be banned.

The trick behind the study was that the statistics on the dangerousness of the car in the example were real at the time of the study, but that car was actually *not* a German car but the Ford Explorer, a vehicle manufactured in the United States. In the scenario just presented, subjects were evaluating whether to ban a dangerous German vehicle on American streets. This allowed us to employ a second group of subjects (also US university students) to evaluate the reverse scenario—whether to ban a dangerous American vehicle on German streets. The subjects in this group were told that, according to a comprehensive study by the US Department of Transportation, Ford Explorers were eight times more likely than a typical family car to kill occupants of another car in a crash and that the German Department of Transportation was considering a ban on the sale of the Ford Explorer in Germany.

This second group of subjects answered the same set of questions as the first, but now from the standpoint of the *German* Department of Transportation. We found that, in this case, only 51.4 percent of the subjects thought the Ford Explorer should be banned in Germany. Our study illustrates, clearly and simply, how people judge the same harm more harshly if it is done to their own side. In this case, they saw the dangerous vehicle as much more deserving of being banned if it were a German vehicle in America than if it were an American vehicle in Germany.

Myside bias has been studied much more systematically in other research. For example, assessments of the logical validity of informal arguments have been shown to be infected by myside bias. In one of the oldest studies, Norman Feather (1964) had subjects evaluate syllogisms presented as informal arguments. In a typical trial of his experiment, subjects would be told to accept as fact that a charitable and tolerant attitude toward mankind helps to bring people together in love and harmony; and that Christianity always helps to bring people together in love and harmony. They were then told to evaluate the soundness of the conclusion "Therefore a consequence of Christianity is a charitable and tolerant attitude toward mankind." Although this conclusion is actually not logically valid, those of Feather's (1964) subjects who were ranked high in religiosity found that the invalidity was much harder to detect than subjects who were not highly religious did.

Anup Gampa and colleagues (2019) observed that, when evaluating informal logical arguments, political ideology acted much like religiosity

did in the 1964 Feather experiment. Syllogisms with the conclusion "Therefore marijuana should be legal" were easier for liberals and harder for conservatives to judge correctly when the conclusion was valid, whereas syllogisms with the conclusion "Therefore no one has the right to end the life of a fetus" were harder for liberals and easier for conservatives to judge correctly when the conclusion was valid. Performance on the four-card selection task (Wason 1966),[8] another paradigm involving logical reasoning, is also affected by myside bias. Erica Dawson, Thomas Gilovich, and Dennis Regan (2002) found that it was much easier for a subject to find the cards that falsified the rule if the rule stated a negative stereotype with respect to the subject (a female subject testing the rule "All women are poor drivers") than it was to find the cards that falsified the rule if the rule stated a positive stereotype with respect to the subject (an Asian subject testing the rule "All Asian Americans are smart").

Note that the studies by Feather (1964), Gampa and colleagues (2019), and Dawson and colleagues (2002) all demonstrate what transforms a belief bias experiment into a myside bias experiment. In a belief bias syllogistic reasoning experiment, for example, the believability of the conclusion will be manipulated—comparing, say, the believable "Roses are red" conclusion with the unbelievable "Mice are insects" conclusion. The conclusions in this and other belief bias experiments will be testable beliefs—again, using Robert Abelson's (1986) term, whereas, in the myside bias experiments just discussed, the key beliefs are distal beliefs—whether marijuana should be legal or whether Christians are charitable. When we review the individual difference correlates of these biases in chapter 3, we will see that using distal beliefs versus testable beliefs in these paradigms leads to vast differences in our ability to predict who will reason correctly and who will not.

As these myside bias studies show, ideology and politics, which represent distal beliefs that are not easy to empirically verify, are rich sources of myside bias (Ditto et al. 2019a). For example, Jarret Crawford, Sophie Kay, and Kristen Duke (2015) found that when liberal subjects were told that a military general had criticized the president of the United States, they were more likely to excuse the behavior of the general when the president was George W. Bush than when the president was Barack Obama. Conservative subjects, on the other hand, were more likely to excuse the behavior of the general when the president was Obama than when the president was Bush.

Myside bias infects many different kinds of political judgments, and it fuels self-serving decisions in negotiations and in work environments as well. Thus Kyle Kopko and colleagues (2011) found that rulings on the adequacy of challenged ballots in elections were infected by a partisan bias. Thus, too, in examining what subjects thought about the appropriate payment for working on a common task with someone else, David Messick and Keith Sentis (1979) found that subjects who believed they had worked more on the task than the other person tended to think they should be paid more. In contrast, however, subjects who believed they had worked *less* on the common task tended to think both workers should be paid the same.

Such mysided thinking certainly plays out in real life. Max Bazerman and Don Moore (2008) report on a survey where, for subjects in one group, 44 percent thought that if they sued someone and lost their suit, they should pay the legal costs of the person they sued. In contrast, for subjects in a second group, 85 percent thought that if someone sued them and they won the case, the other party should pay their legal costs. Thus subjects' judgments of fairness depended to a great extent on which side of the outcome they were on.

Linda Babcock and colleagues (1995) had dyads of subjects simulate being plaintiff or defendant in an automobile accident case adjudicating damages (an actual case in Texas, where the plaintiff was suing the defendant for $100,000). After being assigned their roles, plaintiffs and defendants both read twenty-seven pages of testimony and then attempted to settle on an amount without going before a judge. They were told that failure to settle would result in a penalty for both parties. Under this condition, 72 percent of the subject dyads reached a settlement. But when the subject dyads in a second group read the twenty-seven pages of testimony *before* they were assigned their roles, 94 percent reached a settlement. The significantly lower settlement rate in the former condition was a result of the subjects' feeling too confident of their respective sides in the case due to their myside orientation while reading the case testimony.

In argument evaluation experiments (Stanovich and West 2008a), we had subjects rate the quality of arguments about abortion (and another issue—lowering the drinking age—that yielded similar results). The pro-choice and pro-life arguments were judged by experts to be similar in quality and strength. Consistent with some previous research (Baron 1995), a strong myside bias was observed. That is, subjects rated the arguments that

were consistent with their own position as better than the arguments that were not.

Charles Taber and Milton Lodge (2006) had subjects evaluate pro and con arguments on the issues of affirmative action and gun control. They found that subjects preferred arguments that matched their prior opinions on those two issues over arguments that contradicted their prior opinions, even when the arguments were similar in quality. Taber and Lodge also found that subjects took much more time reading and thinking about arguments when these contradicted their prior opinions because they were selectively generating refutations of them (see Edwards and Smith 1996).

Myside processing undermines our ability to evaluate the evidence produced by scientific studies. Charles Lord, Lee Ross, and Mark Lepper (1979) presented subjects with the design and results of two studies on the effects of capital punishment. One study reported data supporting the deterrent effect of the death penalty, and the second presented data disconfirming it. One group of subjects supported the death penalty and another opposed it (both groups were selected based on their responses to the same questionnaire). Subjects rated the study that confirmed their prior opinion more favorably than the one that disconfirmed it, even though the two studies were designed to be similar in their methodological rigor.

The most cited result from the Lord, Ross, and Lepper 1979 study, however, was the subjects' response to it at the end of the experiment. At first glance,[9] from a Bayesian perspective, it would seem that the two groups would converge in their opinions after reading the two studies, which, taken together, produced mixed evidence. Instead, both groups had processed the studies in a myside manner—accepting the evidence that was favorable to their own view and exaggerating the defects of the evidence that was not. As a result, the groups were even more polarized after reading the two contradictory studies.

Taber and Lodge (2006) observed a similar polarization, but only among those who were ranked high in political knowledge. In fact, the attitude polarization found by Lord, Ross, and Lepper (1979) is not always observed in myside experiments, and when it is observed, it does not always characterize performance on every issue (Gerber and Green 1998; Hahn and Harris 2014; Kuhn and Lao 1996; MacCoun 1998; Munro and Ditto 1997). But whether or not the polarization occurs in experiments, one result is consistently found. The evidence is almost always evaluated with a myside bias.

That subjects critique unfavorable studies and arguments more harshly has been demonstrated many times in the literature. For example, in several experiments, Paul Klaczynski and colleagues (Klaczynski 1997; Klaczynski and Lavallee 2005) presented subjects with flawed experiments and arguments that led to conclusions either consistent or inconsistent with their prior opinions and beliefs. Subjects were then asked to critique the flaws in the experiments. Robust myside bias effects were observed—subjects found many more flaws when the experiment's conclusions were inconsistent than when they were consistent with their prior opinions and beliefs.

People not only *evaluate* arguments in a myside biased manner; they *generate* arguments in a biased manner as well (Perkins 1985). In several experiments, my research group (Toplak and Stanovich 2003; Macpherson and Stanovich, 2007) had subjects explore arguments both for and against various public policy propositions (e.g., "People should be allowed to sell their internal organs"; "Tuition should be raised to cover the full cost of a university education"). When subjects had a strong opinion on the issue, they generated many more arguments for their side than for the opposite one. This was true even when they were given explicit instructions to be unbiased in their reasoning (Macpherson and Stanovich 2007).

Myside bias shows up in more subtle ways as well—both in real life and in the laboratory. In the real world, risk and reward are positively correlated. High-risk activities tend to have greater benefits than low-risk activities do.[10] Contrary to this real-life relationship, studies have found that people's ratings of the risk and reward of various activities are *negatively* correlated (Finucane et al. 2000; Slovic and Peters 2006) both across activities within subjects and across subjects within activities. When something is rated as having high benefits, it tends to be seen as having low risk; and when something is rated as having high risk, it is seen as having low benefits. Paul Slovic and Ellen Peters (2006) suggest that risk perception shows this kind of myside bias because it is driven by affect—if we like the benefits of something, we tend to think it is low risk. Our research group confirmed this finding in a within-subject design (Stanovich and West 2008b). Subjects who saw a benefit in drinking alcohol rated the risks of drinking alcohol as lower than those who saw no such benefit. And subjects who saw substantial benefits in using pesticides rated the risks in using them as lower than subjects who saw no such benefits.

Brittany Liu and Peter Ditto (2013) observed a similar self-serving trade-off when judging the morality of various actions, and they found it on both sides of the political spectrum. Subjects were asked about the moral acceptability of four different actions: the forceful interrogation of terrorist suspects, capital punishment, condom promotion in sex education, and embryonic stem cell research (the first two actions being more often seen as morally acceptable by politically conservative subjects than by politically liberal subjects and the second two being more often seen as morally acceptable by politically liberal subjects than by politically conservative ones). They were asked about the morality of each action in itself, whether it was immoral *even if* effective in fulfilling its intended purpose. The subjects were also asked about the perceived likelihood of beneficial consequences of the action (e.g., whether forceful interrogation produces valid intelligence; whether promoting condom use helps reduce teen pregnancy and sexually transmitted diseases).

For each of the four actions, the more strongly subjects believed that the action was immoral even if it had beneficial consequences, the less strongly they believed it would actually have beneficial consequences. Thus the more strongly subjects endorsed the belief that promoting the use of condoms was morally wrong even if it helped prevent pregnancy and sexually transmitted diseases, the less likely they were to believe that condoms actually were effective at preventing these problems. Thus, too, the more strongly subjects endorsed the belief that the forceful interrogation of terrorist suspects was morally wrong even if it yielded valid intelligence, the less likely they were to believe that it actually did yield valid intelligence. In short, the subjects tended to de-emphasize the costs of their moral commitments, just as the subjects in the Finucane and colleagues 2000 study tended to minimize the risks of activities they approved of.

Michael Huemer (2015) discusses how we use facts to fit our beliefs in mysided ways. He notes that, in the 2×2 matrix of beliefs about capital punishment (whether or not capital punishment deters crime by whether or not many innocent people are convicted of crimes), two of the four cells are overpopulated and two are underpopulated. Thus, although many people believe that capital punishment deters crime and that not many innocent people are convicted of crimes, on the one hand, and many people believe that capital punishment fails to deter crime and that many innocent people are convicted of crimes, on the other, almost no one holds either of the two

other conjunctions of beliefs, both of which are quite plausible: that capital punishment deters crime but that many innocent people are convicted of crimes or that capital punishment fails to deter crime but that very few innocent people are convicted of crimes. This suggests that people's evaluations of beliefs about capital punishment are linked not to assessing, independently, the evidence on each belief but, instead, through myside bias, to their convictions about capital punishment.

The myside examples considered so far have largely involved the interpretation of written descriptions of arguments or experiments, but other research shows that myside bias can even affect the interpretation of the *numerical* outcome of an experiment. Subjects' interpretation of covariation data relevant to an experimental outcome can be distorted by their prior hypotheses about the nature of the relationship (Stanovich and West 1998b). In a typical, purely numeric covariation detection experiment not assessing myside bias, subjects are shown data from an experiment examining the relation between a treatment and patient response. They might be told, for instance, that

200 people were given the treatment and improved

75 people were given the treatment and did not improve

50 people were not given the treatment and improved

15 people were not given the treatment and did not improve

In covariation detection experiments, subjects are asked to indicate whether the treatment was effective. The example presented here represents a difficult problem that many people get wrong, believing that the treatment in this example is effective. Subjects focus, first, on the large number of cases (200) in which improvement followed the treatment and, second, on the fact that, of the people who received treatment, many more showed improvement (200) than showed no improvement (75). Because this probability (200/275 = .727) seems high, subjects are enticed into thinking that the treatment works. This is an error of rational thinking. Such an approach ignores the probability of improvement where treatment was *not* given. Since this probability is even higher (50/65 = .769), the particular treatment tested in this experiment can be judged to be completely ineffective. The tendency to ignore the outcomes in the no-treatment condition and focus on the large number of people in the treatment-improvement group entices many people into viewing the treatment as effective.

Dan Kahan and colleagues (2017) presented difficult problems like this to subjects who were randomly assigned to one of four conditions. Two conditions involved a hypothetical situation of a skin cream treatment for a rash. Subjects in the two rash conditions (with identical numbers, but with the column names reversed) were given numerical data in a 2×2 matrix and had to discern whether the treatment was effective. These represented the control conditions (the conditions not involving myside bias).

In the two myside bias conditions, subjects were presented with 2×2 matrices of data (with the same numbers as the rash conditions) that involved a city government deciding whether to pass a law banning private citizens from carrying concealed handguns in public. Subjects were told that, to address this question, researchers had divided cities into two groups: one group consisting of cities that had recently enacted bans on concealed weapons and another group of cities that had no such bans. The two columns indicated the number of cities in which crime had increased and the number of cities in which crime had decreased. Two different conditions were created whereby the numbers in the 2×2 matrix were the same but the column labels (number of cities in which crime increased versus number of cities in which crime decreased) were simply reversed, thus creating one study in which the data indicated that gun control was effective and another study in which the data indicated that gun control was ineffective.

In the Kahan and colleagues 2017 study, the subjects' prior attitudes toward gun control were also assessed. Because subjects were randomly assigned to the conditions, some saw numerical data that supported their prior opinion and others saw data that contradicted their prior opinion about gun control. Still other subjects saw data about which they presumably had no prior opinion (the subjects assigned to the two rash conditions). The results clearly indicated that subjects were more accurate in their covariation assessments when the gun control data supported rather than contradicted their prior opinion, performing their assessments better than the subjects in the corresponding rash condition in the first instance and worse in the second instance.

Kahan and colleagues (2017) also observed that the myside bias was present in subjects on both sides of the issue in question. That is, it was observed in both pro–gun control and anti–gun control subjects. This demonstration of a myside bias in the evaluation of purely numerical data (rather than of a complicated experimental design, as in many previous myside

studies) was extended by Anthony Washburn and Linda Skitka (2018) and by S. Glenn Baker and colleagues (2020) to a variety of other issues that trigger strong convictions—for example, immigration, health care, same-sex marriage, welfare, nuclear power, and carbon emissions. Matthew Nurse and Will Grant (2020) replicated the findings of these studies using the issue of climate change risk perceptions.

Myside Bias: From Laboratory to Real Life

In early to mid-2019, a study by Leaf Van Boven and colleagues with a particularly interesting myside bias research design appeared online. Its subjects were asked to process quantitative probabilistic information about two controversial issues: the Trump administration's ban on travel and immigration from seven countries, five of which were majority-Muslim countries (Syria, Iran, Libya, Somalia, and Yemen), meant to prevent potential terrorists from entering the United States, and an assault weapons ban, meant to reduce mass shootings. Contextualizing information was given to the subjects on the travel ban, including the fact that various other courts and organizations had questioned its legality, claiming that it was discriminatory. Subjects were then given the following statistics (M = Muslim; T = terrorist), which they were told were based on current and historical data:

p(M): The probability that an immigrant is from a Muslim country is 17 percent.

p(T): The probability that an immigrant is a terrorist is 0.00001 percent.

p(T|M): The probability that an immigrant from a Muslim country is a terrorist is 0.00004 percent.

p(M|T): The probability that a terrorist immigrant is from a Muslim country is 72 percent.

They were then asked which one of these probabilities was most important to them personally in deciding whether to support or oppose the travel ban policy (subjects had previously indicated whether they supported or opposed the policy on another questionnaire).

Most subjects chose one of the two conditional probabilities as the most important. Clearly, the "hit rate," p(M|T), of 72 percent seemed to support the travel ban policy more than the "inverse conditional probability," p(T|M), of 0.00004 percent did. Subjects who had expressed their support of the

travel ban policy at the start of the experiment overwhelmingly chose p(M|T) as the most important probability, but subjects who had expressed their opposition to it, in contrast, overwhelmingly chose p(T|M) as the most important probability. The huge myside bias observed was roughly equivalent on both sides of this issue, and it was not attenuated by higher numeracy. In fact, the more numerate subjects displayed a greater myside bias, a finding we will discuss in greater detail in chapter 3.

One of the most interesting things about the 2019 Van Boven and colleagues experiment was that it tested exactly the same subjects who had responded to the travel ban issue on a second controversial issue of contemporary importance, an assault weapons ban, meant to reduce mass shootings. The subjects were given a definition of "assault weapon" (any of a number of semiautomatic rifles, and other semiautomatic weapons equipped with attachments—such as a scope, pistol grip, or grenade launcher—or high-capacity magazines), they were told that a comprehensive bill banning a number of assault weapons had been introduced in Congress, and they were given the following statistics (presented as frequencies in order to disguise the parallel with the experiment's other issue), based on current and historical data (S = mass shooting; A = assault weapon):

p(S): In the last few years, 6 out of 100 million American adults committed a mass shooting.

p(A): In last few years, 12 million out of 100 million American adults owned an assault weapon.

p(A|S): Out of 6 American adults who committed a mass shooting, 4 owned an assault weapon.

P(S|A): Out of 12 million American adults who owned an assault weapon, 4 committed a mass shooting.

They were then asked which one of these statistics was most important to them personally in deciding whether to support or oppose the assault weapons ban.

Most subjects chose one of the two conditional probabilities as the most important. Clearly, the hit rate, p(A|S), of 4 out of 6 (67 percent) seemed to support the assault weapons ban more than the inverse conditional probability, p(S|A) of 4 out of 12 million (0.000003 percent). Subjects who had supported the assault weapons ban overwhelmingly chose p(A|S) as the most important, but subjects who had opposed the assault weapons ban,

in contrast, overwhelmingly chose p(S|A) as the most important. As on the previous issue, the huge myside bias observed was roughly equivalent on both sides of this issue, and it was not attenuated in those subjects high in numeracy (who in fact displayed a greater myside bias).

You have no doubt already intuited what is amazing about the results of the 2019 Van Boven and colleagues experiment. The subjects who opposed the travel ban tended to *support* the assault weapons ban (for simplicity, let's call them "the liberals")—and the subjects who supported the travel ban tended to *oppose* the assault weapons ban (for simplicity, let's call them "the conservatives"). That means that both liberals and conservatives were switching their preference for types of evidence depending upon the issue in question. The liberals did not like focusing on the hit rate when the issue was a travel ban, but they did when the issue was an assault weapons ban. Conversely, the conservatives liked focusing on the hit rate when the issue was a travel ban, but they did not when the issue was an assault weapons ban. The Van Boven and colleagues 2019 experiment provides a particularly good demonstration of how people pick and choose which statistic they view to be most important based on which is most consistent with their prior opinion on the issue at hand.

As I was pondering the implications of the Van Boven and colleagues (2019) experiment in the first half of 2019, I came across a *New York Times* article (Ward and Singhvi 2019) discussing the claim that there was an immigration crisis on the southern border of the United States. The entire thrust of the article was to present statistics rebutting the claim that the situation on our Mexican border was troubling. The three key statistics presented in the article were, first, that the number of arrests for illegally crossing the Mexican border had been decreasing since 2006; second, that most of the drugs seized on the southern border were seized at legal points of entry and not along the open border; and, third, that, although statistics were hard to come by, it appeared that the criminal conviction rate for undocumented immigrants in the United States was actually lower than that for native born citizens.[11] These statistics were clearly presented with the rhetorical purpose of refuting the views of those who were concerned about the southern border situation.

Prompted by reading the Van Boven and colleagues 2019 study, I began to wonder how people concerned with gun violence would react to statistics

comparable to those presented by the *New York Times* on the illegal immigration issue. Imagine that there was legislation proposed to ban the AR-15 semiautomatic weapon. Imagine you are in favor of this legislation because you are a gun control advocate who is concerned about the large number of mass murders by firearms. Now imagine that a gun-rights advocate presents you with the following statistics: first, that the number of murders committed with firearms in the United States has been dropping fairly steadily since 1990; second, that the vast majority of firearm murders in the United States were committed with firearms other than the AR-15; and, finally, that the murder rate of AR-15s was lower per firearm than that of other firearms. The question that I asked myself after concocting this hypothetical was, if someone were a gun control advocate, would such statistics be any reason for that person not to support a ban on the AR-15 weapon? I think the answer is clearly not.

The thinking of the gun control advocate would be something like the following. A negative outcome is happening, and the advocate of the AR-15 ban wants it to stop. That the negative outcome is declining over time or that the AR-15 is implicated in only a small fraction of murders would seem to be of little concern to the gun control advocate who wants to bring the murder rate down. But surely the same can be said for the citizen who wants to decrease illegal immigration. That the negative outcome (illegal immigration) seen by this citizen has been declining over the years, or that some of the negative effects (illegal drug importation) are coming from policed borders and not unpoliced ones surely is irrelevant to such a citizen. Neither are relative rates of crime when the citizen's safety depends on the absolute numbers, not the relative rates, of crimes (just as global warming depends on the absolute not the per capita level of carbon dioxide). The *New York Times* reporters seem oblivious to the fact that their statistics on immigration—as congenial as they may seem to an open-borders advocate—would seem utterly irrelevant to citizens who want illegal immigration to end. They are as irrelevant as the parallel set of statistics listed in this section would be to the gun control advocate. The implications of the Van Boven and colleagues 2019 experiment offer a little taste of what is to come in later chapters, when we discuss some of the political and social policy implications of myside bias.

Why Is Myside Processing Such a Ubiquitous Tendency?

The brief and selective review of studies discussed so far was meant to suggest what is more comprehensively represented in table 1.1: that myside bias has been demonstrated in many different paradigms across many different behavioral and cognitive science disciplines. The extant literature also demonstrates that myside bias is not confined to any particular demographic group. It occurs across a wide range of ages. It is not limited to people of low intelligence—a fact that will be discussed at length in chapter 3. Myside bias is displayed by people holding all sorts of belief systems, values, and convictions. It is not limited to those with a particular worldview. Any belief that is held with conviction—any distal belief, to use Robert Abelson's (1986) term—can be the driving force behind myside thinking. In short, as an information processing tendency, myside cognition is ubiquitous.

Some might argue that something so ubiquitous and universal must be grounded in the evolution of our cognitive systems (either as an adaptation or as a by-product). Others, however, might argue that myside bias could not be grounded in evolution because evolutionary mechanisms would be truth seeking, and myside bias is not. In fact, evolution does not guarantee perfect rationality in the maximizing sense used throughout cognitive science—whether as maximizing true beliefs (epistemic rationality) or as maximizing subjective expected utility (instrumental rationality). Although organisms have evolved to increase their reproductive fitness, increases in fitness do not always entail increases in epistemic or instrumental rationality. Beliefs need not always track the world with maximum accuracy in order for fitness to increase.

Evolution might fail to select out epistemic mechanisms of high accuracy when they are costly in terms of resources, such as memory, energy, or attention. Evolution operates on the same cost-benefit logic that signal detection theory does. Some of our perceptual processes and mechanisms of belief fixation are deeply unintelligent in that they yield many false alarms, but if the lack of intelligence confers other advantages such as extreme speed of processing and the noninterruption of other cognitive activities , the belief fixation errors might be worth their cost (Fodor 1983; Friedrich 1993; Haselton and Buss 2000; Haselton, Nettle, and Murray 2016). Likewise, since myside bias might tend to increase errors of a certain type but reduce errors of another type, there would be nothing strange

about such a bias from an evolutionary point of view (Haselton, Nettle, and Murray 2016; Johnson and Fowler 2011; Kurzban and Aktipis 2007; McKay and Dennett 2009; Stanovich 2004). What might be the nature of such a trade-off?

For many years in cognitive science, there has been a growing tendency to see the roots of reasoning in the *social* world of early humans rather than in their need to understand the natural world (Dunbar 1998, 2016). Indeed, Stephen Levinson (1995) is just one of many theorists who speculate that evolutionary pressures were focused more on negotiating cooperative mutual intersubjectivity than on understanding the natural world. The view that some of our reasoning tendencies are grounded in the evolution of communication dates back at least to the work of Nicholas Humphrey (1976), and there are many variants of this view. For example, Robert Nozick (1993) has argued that in prehistory, when mechanisms for revealing what is true about the world were few, a crude route to reliable knowledge might have been to demand reasons for assertions by conspecifics (see also Dennett 1996, 126–127). Kim Sterelny (2001) developed similar ideas in arguing that social intelligence was the basis of our early ability to simulate (see also Gibbard 1990; Mithen 1996, 2000; Nichols and Stich 2003). All of these views are, despite subtle differences between them, sketching the genetic-cultural coevolutionary history (Richerson and Boyd 2005) of the negotiation of argument with conspecifics.

The most influential synthesis of these views—and the most relevant to myside bias—was achieved by Hugo Mercier and Dan Sperber (2011, 2017),whose subtle, nuanced theory of reasoning is grounded in the logic of the evolution of communication. Mercier and Sperber's theory posits that reasoning evolved for the social function of persuading others through arguments. If persuasion by argument is the goal, then reasoning will be characterized by myside bias. We humans are programmed to try to convince others with arguments, not to use arguments to ferret out the truth. Like Levinson (1995) and the other theorists mentioned earlier, Mercier and Sperber (2011, 2017) see our reasoning abilities as arising from our need not to solve problems in the natural world but to persuade others in the social world. As Daniel Dennett (2017, 220) puts it: "Our skills were honed for taking sides, persuading others in debate, not necessarily getting things right."

In several steps, Mercier and Sperber's (2011, 2017) theory takes us from the evolution of reasoning to our ubiquitous tendency, as humans, to reason

with myside bias. We must have a way of exercising what Mercier and Sperber call "epistemic vigilance." Although we could adopt the inefficient strategy of differentiating trustworthy people from untrustworthy people by simply memorizing the history of our interactions with them, such a strategy would not work with new individuals. Mercier and Sperber (2011, 2017) point out that argumentation helps us to evaluate the truth of communications based simply on content rather than on prior knowledge about particular persons. Likewise, we learn to produce coherent and convincing arguments when we wish to transmit information to others with whom we have not established a trusting relationship. These skills of producing and evaluating arguments allow members of a society to exchange information with other members without the need to establish a prior relationship of trust with them.

If, however, the origins of our reasoning abilities lie in their having as a prime function the persuasion of others through argumentation, then our reasoning abilities in *all* domains will be strongly colored by persuasive argumentation. If the function of producing an argument is to convince another person, it is unlikely that the arguments produced will be an unbiased selection from both sides of the issue at hand. Such arguments would be unconvincing. Instead, we can be expected to have an overwhelming tendency to produce arguments that support our own opinion (see Mercier 2016).

Mercier and Sperber (2011) argue that this myside bias carries over into situations where we are reasoning on our own about one of our opinions and that, in such situations, we are likely to *anticipate* a dialogue with others (see Kuhn 2019). The anticipation of a future dialogue will also cause us to think to ourselves in a mysided manner. Mercier and Sperber's (2016, 2017) theory makes differential predictions about our ability to *evaluate* the arguments of others. Basically, it predicts that, though we will display a myside bias in evaluating arguments if the issue in question concerns a distal belief, we will display much less of a myside bias when the issue in question is a testable belief.[12]

In short, Mercier and Sperber (2011, 2017) provide a model of how myside bias is inherent in the evolutionary foundations of reasoning. From their evolutionary story of origins, it is not hard to imagine how the gene-culture coevolutionary history (see Richerson and Boyd 2005) of argumentation abilities would reinforce the myside properties of our cognition (a subject

of much speculation I can only allude to here). For example, in an early discussion of myside costs and benefits, Joshua Klayman (1995) suggests some of the gene-culture coevolutionary trade-offs that may have been involved. He discusses the cognitive costs of generating ideas outside the mainstream—"Just keeping an open mind can have psychic costs" (Klayman 1995, 411)—and the potential social disapproval of those who waffle. And he discusses the often-immediate benefits of myside confidence triumphing over the more long-term benefits of doubt and uncertainty. Anticipating Mercier and Sperber (2011) in some ways, Klayman (1995, 411) argues that "when other people lack good information about the accuracy of one's judgments, they may take consistency as a sign of correctness"; he points to the many characteristics of myside argumentation (e.g., consistency, confidence) that can bootstrap social benefits to the individual and group. Dan Kahan's discussions of his concept of identity protective cognition (Kahan 2013, 2015; see also Kahan, Jenkins-Smith, and Braman 2011; Kahan et al. 2017) likewise suggest other potential mechanisms for myside bias to confer evolutionary benefit by facilitating group cohesion. These possible social benefits must be taken into account when we assess the overall rationality of mysided thinking—a point I will explore at greater length in chapter 2.

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