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THE NATURE AND VALUE OF CRITICAL THINKING

This book is a practical guide to critical thinking. It might seem unnecessary to be reading a guide to something you do all the time and are probably already pretty good at. When I tell people that I am writing a book on critical thinking they sometimes tell me that they consider themselves to be very good critical thinkers. At the very least, they say that they consider critical thinking to be very important. I am sure that they are right on both counts. We think critically a good bit of the time, and on the whole we do it pretty well. Still, I think there is always something to learn from thinking hard about what one is already good at.

In this chapter, we will explore the nature and value of critical thinking. We will ask what critical thinking is and how it differs from other kinds of thinking. We will explore what it *means* to think critically; what makes that kind of thinking *critical*. As part of this, we will consider whether critical thinking varies from one discipline to the next. Is critical thinking in geology different from critical thinking in design or in humanities? We will see that while the concepts, methods, and standards may differ from one discipline to the next, there is a basic essence or core of critical thinking that remains the same across all disciplines. Whether one is doing chemistry, design, astrology, or philosophy, there are common standards that you should strive to maintain, and practical strategies to help you make sure that you do. This book is designed to introduce you to this essential core of critical thinking while at the same time providing you with the tools you need to identify the concepts, methods, and standards distinctive of different disciplines.

Once we have said what we mean by critical thinking, we can then ask what place this kind of thinking does or should occupy in our daily lives, both in and out of the classroom. When is it appropriate to think critically, and are there some parts of our lives where critical thinking tends to dominate or where it tends to be ignored? We will see that critical thinking is appropriate whenever we are trying to decide what we ought to believe about some matter of fact or whenever we are trying to decide what to do or what course of action to adopt. In short, critical thinking is needed whenever we reason about what to believe or what to do.

Finally, and perhaps most importantly, we will ask why being a critical thinker **matters**. What makes critical thinking valuable? Why should we engage in it? We will see that being a critical thinker is valuable for several reasons. Perhaps most obviously, thinking critically about a question or problem can help one get the right answer or solution. By thinking critically about what to believe or what to do, we increase our chances that our beliefs will be true and our actions effective. Thinking critically may not guarantee that you get the right answer; but a good case can be made that unless you think critically you will get the right answer only by luck, and relying on luck is not a wise policy. But critical thinking has a deeper value than just its ties to truth. Critical thinking is also closely tied to one variety of freedom. By thinking critically, one can make up one's own mind and making up one's own mind is essential if we are to be the master of our own lives. Critical thinking, we will see, is essential to personal autonomy.

1.1 THE NATURE OF CRITICAL THINKING

There are many definitions for critical thinking, but Robert Ennis, one of the leading researchers on critical thinking, offered the following definition many years ago and it remains, to my mind, the best of the bunch.

Critical thinking is reasonable, reflective thinking that is aimed at deciding what to believe or what to do.

We can see that there are several elements to this definition, so let us look at them one at a time, starting with the last one.

Critical thinking is the thinking that is *aimed at deciding what to believe or what to do*. Deciding *what to believe* is a matter of deciding what the facts are, figuring out what the world is like, or at least what some little corner of it is like. We make these kinds of decisions when we decide whether it is raining out or sunny, whether the Blue Jays stand a chance this year, whether the kids will put up with another meal of macaroni and cheese, whether the movie was as good as its billing, whether the restaurant has gotten better over the years, or whether we should trust what our teachers tell us. In deciding what to believe on some matter we take a stand on it. If it is a decision on a factual matter, like the decision about the weather or about the Blue jays, then we take a stand on what the facts are. If it is a decision on an evaluative matter, like the one about the movie or the restaurant, then in deciding what

to believe we are taking a stand on what is good or better. In either kind of case, critical thinking is aimed at helping us to make those kinds of decisions about what to believe.

Critical thinking is reasonable, reflective thinking that is aimed at deciding what to believe or what to do.

Deciding **what to believe** involves reasoning about what the facts are. This is *theoretical reasoning*.

Critical thinking is also **aimed at decisions about what to do**. Deciding what to do really has two parts. First, one has to decide what to value or to strive for. This is a matter of deciding on one's goal or end. Then, one has to decide how best to achieve that end. This is a matter of deciding on the best **means** to that end. Should I go for a run now or keep working on my book? Should I spend my savings on a new car or continue using my beat up one? Should the city spend its limited resources on building a new bridge? Should the country move toward a universal health care plan? Should I tell the truth when my friend asks me about her boyfriend? Should I give to charities? Usually we decide what to do on the basis of what we already value or on what we already think makes for a good life. I decide to go for a run instead of continuing to work on this book because I feel that running and staying in shape is an important part of my life. I decide to tell the truth to my friend about her new car because I value honesty in my friends and want them to consider me trustworthy. But sometimes, deciding what to strive for or what goals to pursue requires first deciding what one will value, what kind of person one wants to be, and what kind of life one wants to lead. In deciding whether to pursue graduate school in philosophy, I had to make a decision about to value, about what kind of shape I wanted my life to take. Decisions about what to value are among the most difficult and profound decisions we can make. Critical thinking can help us to make these kinds of decisions. But once we make them, once we decide what we want our life to be like, we still need to decide what the best way is to make our life that way. Once we choose the ends, we still need to decide on the means. Here too, critical thinking can help.

Deciding **what to do** involves reasoning about what to do and how to do it. This is *practical reasoning*.

According to Robert Ennis' definition, critical thinking is **reasonable** thinking. This is so in several respects. First, critical thinking is reasonable thinking because it is sensitive to methods and standards. If we are trying to decide what to make for dinner or whether the Blue Jays stand a chance this year, there are various methods we should use and standards we should keep in mind. If we try to make up our minds on these topics without relying on those methods or respecting these standards, then we

will fail to be thinking critically about the topic. Part of what makes critical thinking *critical* is that it is governed by rules and methods. This does not mean that there is no room in critical thinking for reasonable judgment and flexibility. In fact, as we will see in a moment, part of what makes critical thinking different from other kinds of thinking, such as arithmetical calculation, is that there is usually plenty of room for judgment and a case-by-case flexibility. Still, it is essential to critical thinking that in thinking critically about what to believe or do we rely on methods and are subject to standards. We will spend lots of time in the following chapters learning what these methods and standards are.

Critical thinking is reasonable thinking because it is governed by general methods and standards and because it demands that we have good reasons for our decisions.

Critical thinking is **reasonable** in another and deeper sense. Critical thinking about what to believe or what to do is reasonable, in that it demands that we have reasons, and good ones, for the decisions we make. The aim of critical thinking is not simply to make a decision on what the facts are or what to strive for. In a way, it is easy to make such decisions. What is hard is having **good** reasons for the decisions we make. It is not enough to decide to believe that it is sunny out; one has to have a good reason to decide this. Likewise, it is not enough just to decide to value honesty or justice; one has to have good reason for this decision. So critical thinking is reasonable in that it demands that we have reasons, and good ones, for making the decisions we do. We will be spending a lot of time in what follows exploring what makes something a *good reason* to believe or to do something.

Critical thinking is **reflective** because it involves thinking about a problem at several different levels or from several different angles all at once, and because it sometimes requires thinking about what the right method is to answer or solve some problem.

Finally, Ennis says that critical thinking is **reflective**. We can see what he has in mind if we contrast critical thinking with arithmetical calculation. There is no doubt that calculating the square root of a large number is a kind of thinking and no doubt that it is a thinking that is sensitive to methods and standards. In this respect, arithmetical calculation is like critical thinking. But when one calculates a number's square root, one does not need to think about the methods one is using. One simply uses the formula to get the right answer. In this kind of case, the problem at hand (finding the number's square root) is pretty straightforward: it is perfectly clear from the beginning what is to count as the right answer and what the best means is of finding it. The same is true for many kinds of decisions we make in our daily lives. But some problems are **open-ended**. A problem is open-ended when it is not clear from the outset what would count as a solution to it. In such cases, progress may require thinking hard about the problem itself, and not just calculating an answer to it.

To solve it, we may need to analyze the problem into parts, and we may need to think about the best method to use to find a solution, and while we employ that method we may need to be thinking about whether we are employing it correctly. We may even need to adjust the method or even develop one from scratch. I will have more to say later about open-ended problems and no doubt the line between straightforward ones and open-ended ones is not hard and sharp. Calculating a square root the first few times requires a good deal of reflection even when one does have the formula; and deciding whether it is raining or sunny is usually as straightforward as looking out the window. Still, the contrast should be clear. Critical thinking is **reflective** in the sense that it involves thinking about a problem at several different levels or from several different angles all at once, including thinking about what the right method is for answering or solving the problem.

One of the chief virtues of this definition is that it does not restrict critical thinking to the study of **arguments**. An argument is a series of statements, some of which (the premises) are meant to provide logical support for another (the conclusion). Because we can and often do formulate our reasons for believing or doing something in the form of an argument, critical thinking is surely concerned with arguments. In later chapters we will discuss some strategies and standards for analyzing and evaluating arguments. But the notion of an argument does not always fit naturally across the curriculum. It is hard to see how reasoning about experimental design or about statistical sampling fits the paradigm of an argument. What is more, evaluating reasons for believing something involves assessing their acceptability and their meaning, and neither of these tasks is ordinarily considered argumentation. It is, of course, possible, to stretch the ordinary concept of an argument or of argument analysis to include all these different aspects of critical thinking. But this definition captures them all without artificially extending our ordinary words.

EXERCISE 1

- A.** Comprehension questions. (When you answer these questions, pretend that you are explaining or teaching the answer to a friend who is not in the class. Doing that will force you to put in LOTS more background information that you would if you were trying to explain the material to your teacher.)
- a. In what sense is critical thinking reflective?
 - b. What makes critical thinking a reasonable thinking?
 - c. Why is simple arithmetical calculation not a kind of critical thinking?
 - d. Does critical thinking have to be “critical” in the sense of being negative or skeptical? Explain, using an example.
- B.** Which of the following activities involves critical thinking? If an activity does not involve critical thinking, identify which element in critical thinking is missing.
- a. Riding a bike
 - b. Watching the news on TV
 - c. Doing laundry

- d. Ordering coffee at a local coffee shop
 - e. Planning a vacation
- C. Identify five activities you do on a daily basis that do not involve critical thinking. Identify two or three activities that you do on a daily basis that would be improved by thinking critically about them, and explain how thinking critically would improve it.
- D. Now that you know what critical thinking is, list five reasons why it is good to think critically.
- E. List five possible obstacles to thinking critically. Describe one strategy for overcoming each obstacle.

1.2 CRITICAL THINKING AND KNOWLEDGE

We have been discussing what critical thinking is. But why is it important? Why does it matter whether or not we think critically when we decide what to believe or what to do? The answer is that critical thinking is valuable for two main reasons. First, thinking critically increases our chances of gaining **knowledge**, and knowledge is valuable. Second, thinking critically is essential to making up one's own mind about what to believe or what to do, which is essential to being **autonomous**, and being autonomous is valuable. We will start by discussing knowledge and then turn to autonomy.

Critical thinking aims at knowledge. We don't just want to have opinions about what is true or about what to do. We want to **know** what's true and what to do.

We have seen that critical thinking is thinking that is aimed at deciding what to believe or to do. But ideally we want more than just to have an opinion about the facts; we want to **know** what they are. When we check the weather, our goal is not just to reach a decision about whether it is sunny or not; we want to come to **know** whether it is sunny or not. We want to *know* whether the city ought to spend its scarce resources on building a new bridge. We want to *know* whether HIV causes AIDS all by itself or only in conjunction with other factors. So critical thinking is really aimed at knowledge. But what is knowledge? What is it to know something? By answering these questions we can get quite a bit clearer on what critical thinking is and why it is valuable.

EXERCISE 2

We can start with an exercise. Make a chart with three columns, as follows:

- In the first column, list things that we, either individually or as humans in general, know for a fact. These can be particular facts or kinds of things.

- In the second column, list things that we can know, but currently do not know.
- In the third column, list things that we do not and probably cannot ever know about.

The more variety you can provide in each list the better. (Include something in one of the columns only if you are fairly sure that everyone else in your class would also include in that column. This will avoid controversy from the start.) When you have the Knowledge Chart completed, compare the items in the first and second column and try to identify the relevant differences? What is lacking in the items in the second column that prevents their being in the first column?

The traditional definition of knowledge developed by philosophers says that knowledge is justified, true belief. According to this definition there are three elements to knowledge. We can look at each in turn. Then we will ask how the three elements are related to one another. Let us start with truth.

Knowledge is justified, true belief.

1.3 KNOWLEDGE AND TRUTH

It would be ideal at this point in our discussion to provide a clear and precise definition of truth. I do not mean just a listing of all the truths that there are, though such a list would be valuable. We already know some of what such a list would include. It would have to include the truths that George Bush was the 42nd President of the United States, that a virus causes the flu, and that the Earth orbits the Sun. And we know what things we should leave off that list: that fish are birds, that $2 + 2 = 27$, and that George Washington was the President of France. It would probably be impossible, or at least really hard, to make a complete list of all the truths.

But even if we could, making such a list would not be the same as giving a definition of truth. Think of an analogy. Suppose we made a list of all the people there are, or even of all of the humans that have ever existed. That list would not be a **definition** of human nature. It would not tell us anything about what it is to be a human. To know what it is to be human, we would have to say what all humans have in common and what makes humans different from every other species. Likewise, a list of all the truths would not tell us what it **is** for something to be true. It would not reveal the **nature** of truth. To give a definition of truth we would have to say what it is for something to be true. We would need to say, in a general sort of way that would apply to every case, what *makes* something true.

I do not have any idea how to do this. Nor, I think, does anyone else. Or rather, the only plausible definition that I know of is not very helpful: a statement is true just in case it corresponds with the facts. This is not that helpful because the notion of **corresponding with the facts** is not much clearer than the notion of truth itself. Thankfully, though, we do not really need a definition of truth. For our purposes it will be enough to contrast three attitudes we might take to some subject matter: **Realism, Relativism, and Nihilism**.

1.3.1 Realism, Relativism, and Nihilism

Imagine that there is a large jar of jelly beans on a table in front of you and that you and your friends have to guess the number of jelly beans it contains. Suppose that Ezra guesses that there are 13,451 beans in the jar, and that Ahmed guesses that there are 11,587 beans in it. Neither one really knows for sure how many beans are in the jar. They are just guessing. But now here is a philosophical question: is there a **fact** about the number of beans in the jar? We know that Ezra and Ahmed have different opinions about the number of beans in the jar. But is there a right answer? Is there a fact of the matter? We can ask this same question for any subject matter, not just the number of jelly beans in a jar. In this section we will consider three answers one might give to it.

Suppose that Rachel looks at the jar of beans and says this: “Well, I am not sure how many beans there are in that jar, but I know that there is a right answer. Maybe Ezra is right, maybe Ahmed is right. Maybe neither one is right. But there is a single right answer.” If Rachel really believes this, then she is a realist about the number of beans in the jar. A **realist** about a certain subject matter thinks (i) that there are truths about that subject matter and (ii) that what those truths are is independent of what anybody thinks they are. For the realist, truth is simply “out there.”

A realist about a subject matter thinks that (i) there are **truths** about that subject matter and (ii) that what those truths are is **independent** of what anybody thinks they are.

Because a realist thinks that truth is independent of our beliefs, she also thinks that it is possible (even if it is highly unlikely) that we could all be totally mistaken about or ignorant of the facts in that subject area. She might even think that some facts are just beyond our understanding, that no matter how hard we tried or for how long, we simply could not come to know them. Of course, being a realist does not mean that we have to be skeptical or doubtful about whether we do know anything about that subject matter. One can be a realist about a subject matter and still be quite confident that we know a lot about it. Being a realist simply requires thinking that the facts in that subject area are not determined by or dependent on our beliefs about them. They are what they are, regardless of what we might think that they are.

Suppose, now, that Rebecca looks at the jar of jellybeans and says this: “There is no **single** right answer about how many beans there are in that jar. It all depends. It is true for Ezra that there are 13,451 beans in the jar, and it is true for Ahmed that there are 11,587 beans in it. But there is no such thing as the single, unique truth.” If Rebecca really believed this, then she would be a relativist about the number of beans in the jar. A **relativist** about some subject matter holds that (i) there are truths about that area but (ii) that what they are depends (in some way or other) on what we (or someone) take those truths to be. The relativist and the realist agree that there are truths or facts of the matter in that area, but they differ over how those truths or facts are related to our beliefs about them. The relativist insists that those facts are what

they are because of our beliefs about them, whereas the realist insists that our beliefs have no bearing at all on the facts themselves. The relativist maintains that had our beliefs or our natures been different, then the facts might have been different too. The facts somehow depend on us. This means that on a relativist's view of some subject matter, it is in a certain way impossible for us to be wrong or ignorant of the facts in that area, since our beliefs about what the facts are is at least part of what makes them the facts. We cannot go too far wrong in trying to know that subject matter because we play an essential role in making the subject what it is.

A **relativist** about a subject matter thinks that (i) there are truths about that subject but (ii) that what they are depends on what we (or someone) believe that they are.

There are different versions of Relativism, differing in terms of whose beliefs play the role of determining what the facts are. A **subjective relativist** about some topic thinks that the truth in that subject matter is whatever any one individual takes it to be. She might express this idea by saying things like: "Well, that might be true for you, but it is not true for me." A **social relativist**, by contrast, holds that the truth in that subject matter is whatever the majority of the society or culture takes it to be. "It is true for us, even if it is not true for you or for them." What is common to all versions of Relativism is the idea that the facts are in some way dependent on our beliefs about them; that, in one way or another, the facts are what they are because we are the way we are.

We need to be a little careful about what the realist and the relativist disagree about. We all know that there are lots of different ways to say how many beans the jar contains. Suppose that the jar contains 13,879 beans. There are lots of different ways to state this. Instead of using Arabic numerals, we could use Roman numerals, and say that there are XIII DCCCLXXIX beans in the jar. Or instead of using numerals, we can say that there are thirteen thousand, eight hundred and seventy nine beans in it. Or we can say the number of beans is the square root of 192626641. These are just different ways of saying the same thing, different ways of putting that single truth into words. A realist can agree on this. She can agree that there are many different ways to say what the truth is about the number of beans in the jar. So, when the realist says that there is just one truth about the number of beans in the jar, she does not mean that there is only one way to say what that truth is. And when the relativist says that there are many truths, she does not just mean that there are many ways to say how many beans there are in the jar. She means something more radical: she means that how many beans there are in the jar depends on us in such a way that the number there are for you might be different than the number there are for me. It is not just that there are different ways to state the truth—there are different truths!

Suppose, now, that Nigel looks at the jar of beans and says this: "There is no single, right answer to the question how many beans it contains. Every opinion is just as good as any other opinion. There is no right answer!" If Nigel really believes this, then he is a **nihilist** about the number of jellybeans in the jar. A **nihilist** about some

subject matter holds that there are no truths at all about that subject matter. There are, on the nihilist's view, no facts to be right or wrong about. It is not that the facts depend on us in some way; there are no facts at all (aside from the fact that there are no facts). There is no such thing as truth, according to Nigel, about how many beans are in the jar. Since there is no such thing as truth in that area, there is also no such thing as knowing the truth, and not because we are incapable of coming to know it, but because there is nothing there to be known at all. The nihilist thus disagrees with both the realist and the relativist, though as we just saw, the realist and the relativist also disagree with each other.

A nihilist about some subject matter thinks that there are no truths at all about that subject matter.

I have been illustrating the differences between Realism, Relativism, and Nihilism using the story of the jellybean jar. Now maybe this was not really fair. Maybe everyone already thinks that Realism is the right attitude to take to the matter of how many beans there are in the jar. It would, after all, be pretty odd if Rebecca really did believe that the number of beans might be different for Ezra than for Ahmed. And it would be really odd if Nigel really did believe that there is no right answer! So maybe it is most reasonable to be a realist about the number of beans in the jar. Still, there may be other subject matters where Relativism makes most sense, or where Nihilism makes most sense.

One final point. One could be a realist about one subject matter and a relativist about another and a nihilist about a third. One might think, for instance, that Realism is the proper attitude to take to particle physics or to human history, but think that Nihilism is the right attitude to take toward the nature of Santa Claus. Or one might be a realist about human biology but a relativist about humor, thinking that while the facts about our biological natures are independent of our beliefs about them, whether something is funny or humorous does depend on whether we find it or believe it to be funny. Indeed, it is hard to see how we could possibly all be wrong about whether some joke is amusing. Maybe what makes something funny is simply that we all (in normal conditions) believe it to be funny. If so, then perhaps Relativism is right about humor.

But one cannot take two or all three of those attitudes to one and the same subject. One could not be both a realist and a nihilist about, say, particle physics. For this would mean holding (as a realist) that there are facts about particle physics while also (as a nihilist) denying that there are facts about particle physics. But this is incoherent. Realism and Nihilism about some subject matter are contraries of one another: they both cannot be true, though they could both be false. Likewise, one could not be a relativist and a realist, or a relativist and a nihilist about one and the same subject matter. But in principle one could, and I think we in fact sometimes do, take different attitudes to different subject matters or topics.

One has to have good reasons for being a realist, relativist, or nihilist about some subject matter. It is not enough simply to decide or declare that one will be a relativist about, say, particle physics or geometry, or a nihilist about morality and geography, or a realist about humor and beauty. One has to be able to provide good reasons for thinking that one is taking the appropriate attitude to that subject. If one is a realist about particle physics but a relativist about humor, then one has to be able to explain what the difference is between those subject matters or about our relations to them that warrants taking those different attitudes to them. The explanation cannot simply be that the facts about particle physics are independent of us whereas those about humor are not. To say this is simply to express your attitudes, not to justify or explain them.

1.3.2 Relativism and the Argument from Disagreement

Relativists about a subject matter sometimes try to justify their attitude by pointing to the fact that there is little or no agreement among otherwise well-intentioned and sincere people about what the facts are in that subject matter. Relativists about morality, for instance, point out that there is considerable disagreement among sincere people about just what our moral duties are, or about how to balance competing moral demands. Different people who are sincere and well-meaning disagree about the moral evaluation of such things as abortion, euthanasia, the recreational use of drugs, capital punishment, etc. The list could go on a long time. Relativists about morality suggest that the existence of this kind of disagreement lends support to their Relativism. We can formulate this reasoning for Relativism about morality as an argument.

- (i) There is considerable sincere disagreement over morality.
- (ii) If there is considerable sincere disagreement over the facts in some area, then Relativism is true of that subject area.
- (iii) So, Relativism is true of morality.

Let us call this argument for Moral Relativism, the **Argument from Disagreement**. It would be easy to transform it into an argument for any kind of Relativism. We could get an argument for Relativism about humor by replacing the words “moral” with the word “humor.” But let us focus on this argument, since the main lessons will apply across the board.

The Argument from Disagreement for Moral Relativism

- (i) There is considerable sincere disagreement about morality.
- (ii) If there is considerable sincere disagreement over the facts in some area, then Relativism is true of that subject area.
- (iii) So, Relativism is true of morality.

VALIDITY

An argument is valid when it is not possible for its premises to be true and its conclusion to be false. If its premises were true, then its conclusion would have to be true too.

This is the most important logical virtue in an argument, and of central importance to critical thinking. We will discuss it more in Chapter 3.

The *Argument from Disagreement* has an important logical property. It is **valid**. This means that if the premises (i.e., claims (i) and (ii)) are true, then the conclusion (i.e., claim (iii)) would have to be true too. In other words, it is not possible for those premises to be true and yet for the conclusion to be false. If the premises are true, then they constitute a *conclusive proof* that Moral Relativism is true. We will have much more to say about validity in Chapter 3. But for now, it is enough to note that when an argument is valid, the only question that needs to be considered in evaluating it is whether the premises are true. So let us consider each premise.

The first step in deciding whether a premise is true is to make sure that we know exactly what it means. This is a bit difficult in the case of **The Argument from Disagreement's** premise (i) because it is not very clear what "considerable" means. How much disagreement counts as "considerable?" Does everyone's opinion count equally in deciding when moral disagreement is considerable, or are there moral experts whose opinions matter more? We know that philosophy departments usually have several professors who specialize in moral theory. Are they experts? What would it take to be an expert at moral theory? But suppose they were the experts, and suppose that the moral theorists all agreed on the moral evaluation of some practice (say, euthanasia) but that most everyone else held different opinions? Would premise (i) be true in that case? These are difficult questions about just what claim premise (i) is making, and it is not clear how best to answer them.

Let us set aside the question of what exactly the premise (i) means. Let us ask whether we have good reason to accept it. Is it **true** that there is considerable sincere disagreement over moral facts? It is certainly true that there is disagreement over moral facts. Different societies have held different views about what morality requires or permits. There are sometimes disagreements among people in our own country or even within our own family about morality. People who are sincere and well-meaning can disagree about the moral evaluation of such things as abortion, euthanasia, capital punishment, the recreational use of alcohol and drugs, and the list can go on. So it is hard to deny that there is disagreement over morality.

But even though different societies disagree about some moral claims, there is also often quite broad and deep agreement about others. For instance, even though different societies have different views about which marital and sexual practices are morally acceptable, every society thinks that sexually assaulting one's own children for pleasure is morally wrong. And even though we might disagree with our friends over whether it is morally wrong to be drunk, we probably all agree that it is morally wrong to drive drunk. So, even if it is obvious that there is some sincere moral

disagreement, it may not be so obvious that there is **more** disagreement than there is agreement. Indeed, it might even be that while there is a lot of disagreement about just what it is that morality requires, there is at the same time just as much or even more agreement about what morality requires. This suggests that it is not so clear that the premise (i) in the Argument from Disagreement really is true.

What about the premise (ii) in the Argument from Disagreement? It says that if there is considerable sincere disagreement over the facts in some area, then Relativism is true of that area. Is this true? We can begin by noting that the mere existence of **some** disagreement would not all by itself show that Relativism is true of an area. There is, after all, disagreement about whether Barack Obama was born in the United States, but surely Realism is the right attitude to take to that question. Either he was born in the United States or he was not, and whether he was has nothing to do to anyone's beliefs about it. So mere disagreement cannot, all by itself, show that Relativism is the right attitude to take to a subject matter.

But what if there is **considerable** disagreement? Here too, it is hard to see why that should be a reason to think that Relativism is the right attitude to take to a subject matter. There is, after all, lots of disagreement among physicists over the fundamental features of our Universe. There are still deep disagreements about quantum mechanics, and about the natures of space and time. It seems unlikely that this disagreement will go away anytime soon. But none of this inclines us to be relativists about physics. Indeed, this amount of disagreement is exactly what we expect from a subject as complex and difficult to understand as physics. One reason we continue to be realists about physics is that there is also considerable agreement (at least among experts) about the physical facts, in fact there is far more agreement than there is disagreement. Moreover, as hard and complex as physics is, it still seems that we are making progress. So the mere existence of considerable disagreement does not obviously show that Relativism is the right attitude to take. So we have some reason anyway to doubt whether premise (ii) in the Argument from Disagreement is true.

But what if after a long and exhaustive attempt to reach agreement in some field, we found only widespread and sincere disagreement with little or no agreement at all and no sense that progress was being made? (Just to be clear: this is not, as we have seen, the situation with respect to morality, since there is considerable agreement about moral facts, even though there is also considerable disagreement. Question: Is there also reason to think we are making progress in morality?) Would this justify being a relativist about that subject matter? Or would it instead justify being a nihilist about that subject matter? If we could never reach any substantial level of agreement, should we say that the facts depend on us, or should we say that there are no facts? Under what conditions would it be right to conclude, with the nihilist, that there are no facts at all, that we have been misled somehow into thinking there are facts when there really are not? I am not sure how to decide this question. I find it hard to know when to be a relativist instead of a nihilist. In any event, it seems clear that the existence of considerable sincere disagreement in some subject matter would not necessarily show that Relativism is true of that area. So it is not obvious that premise (ii) in the Argument from Disagreement is true.

We have seen that there is good reason to doubt the truth of both premises in the Argument from Disagreement. It is not obviously true that there is more disagreement about moral facts than there is agreement. And even if there were, it is not clear that this would show that Relativism is true of morality. So the Argument from Disagreement does not show that Moral Relativism is true; the argument is not successful. But the fact that the argument is not successful does not show that Moral Relativism is false. The conclusion of a bad argument might still be true. All we have shown is that one set of reasons for believing in Moral Relativism are not good ones. It might be that there are other, much better reasons for thinking that Moral Relativism is true. And of course it might be true even if we cannot find any reasons to believe that it is true. Still, as a good critical thinker we ought not to believe that Moral Relativism is true unless we have good reasons to believe that it is true. The same is true, of course, for the realist or the nihilist; we all need to have good reasons for our beliefs.

EVALUATING AN ARGUMENT

When evaluating an argument there are only two sorts of questions to ask:

1. Is the argument valid?
2. Are its premises true?

The Argument of Disagreement is valid, but its premises are not true. So it is not a good argument.

Critical thinking assumes that truth is independent of our beliefs.

Nonetheless, the realist might have a slight **methodological** advantage over both Relativism and Nihilism. It is sometimes suggested that Relativism and Nihilism are obstacles or impediments to critical thinking. I do not think this is true. What is true is that **unjustified** Relativism and **unjustified** Nihilism are impediments to critical thinking. One should not be a relativist or a nihilist without good reasons. But perhaps in the absence of convincing reasons to be a relativist or a nihilist, we ought to work under the assumption that Realism is the proper attitude to take. Maybe Realism is the proper **default** view to take, so long as we take it with an open mind, until we are shown that it is wrong. Perhaps it is better to err on the side of Realism than to err on the side of Nihilism or Relativism. In any event, the critical-thinking strategies and standards we will be discussing in the following chapters will assume that Realism is the appropriate attitude to take. We will assume that truth is independent of our beliefs.

1.4 KNOWLEDGE AND BELIEF

The traditional philosophical analysis of knowledge says that knowledge is justified true belief. This means that to know something you also have to believe it. But what do we mean by belief?

Sometimes we contrast what we know with what we merely believe, and sometimes when we talk about our beliefs we have in mind our opinions on moral or religious topics, where it is hard to find general agreement. If you were asked to list your beliefs, you might describe your views on God, happiness, and justice, but not include your views on the day's weather, on your favorite sporting team's recent performance, or on arithmetic. It even sounds a bit odd to say that I believe that $2 + 2 = 4$. It is tempting to say, "I don't believe it; I know it." But one reason that we find this odd to say is that it leaves the mistaken impression that we do not also feel quite confident that we know it. To say that I *believe* that $2 + 2 = 4$ would be to say something weaker than what I could say, and that is what makes it a misleading way to put it. But it might be true that I believe it, even if it would be misleading to say it. In any event, in this book we will follow the philosophical tradition and assume that to know something you must also believe it. Our real concern is with justification anyway and not with belief. Critical thinking is concerned with the **kind of reasons** that a true belief must be based on in order to count as knowledge.

Freedom of belief does not mean that it is reasonable to believe without good reasons.

Believing something to be true is taking a certain attitude toward it. It is an attitude of acceptance: when we believe that there is milk in the refrigerator, then we accept that there is. But belief is not the only form of acceptance. Instead of believing that there is milk in the refrigerator, we can suppose that there is, or assume that there is, or presuppose that there is. These too are ways to accept that there is milk in the refrigerator, but they do not require the same sort of evidence as belief does. Belief is special in that it requires reasons of a special kind. I do not need any evidence or reasons to suppose that there is milk in the fridge. I can simply suppose it for the sake of an argument, or for fun! But to be rational, belief requires good reasons.

FREEDOM AND RESPONSIBILITY

We have and value freedom of action, as well as freedom of belief. It is important that it be, in some sense, up to us what we do and where we go. But this freedom is **limited**: no matter how much I might want to or how hard I try, I am not free to jump to the moon or grow 10 inches in a day. And freedom of action brings great **responsibility** too: I am not free to torture or hurt people for the fun of it.

Are there also limits to what you can believe? Could you now, at this very instant, voluntarily **make** yourself believe that $2 + 2 = 27$, or that the Earth really is at the center of the Solar system? Or are your beliefs not under your immediate voluntary control? Would you like them to be?

Are there also **responsibilities** that come along with having beliefs? Would it be irresponsible for you to believe that the Earth is at the center of the solar system? Why or why not? What would make it irresponsible?

We often speak of **freedom of belief**. Being able to form our beliefs free from outside interference and coercion is often held to be fundamental to human fulfillment. The idea is that we should be permitted to make up our own minds on religious and moral topics. This means that there are limits to the kinds of criticism that can be directed at our beliefs on such topics. But, and this is the crucial point, it does not necessarily mean that there are no epistemic standards against which our beliefs on these topics can be assessed. After all, freedom of belief is not restricted to moral and religious topics. We should also be free to make up our own minds about the weather, arithmetic, human evolution, and the best use of scarce public resources. Our beliefs about the weather and about human evolution still need to be based on good reasons, even if we ought to be allowed to make up our own mind on those topics. So freedom of belief does not mean that we do not need to have good reasons for our beliefs. In fact, as we will see in the next section, having good reasons for our beliefs is essential to genuinely making up our own minds. Critical thinking is appropriate not just when we think about the weather or about public policy. The standards and methods that are central to critical thinking are also appropriate when we decide what to believe about God, justice, or morality.

A good critical thinker withholds belief until enough evidence has been collected.

When we do not have enough evidence, the reasonable thing to do is to withhold belief, to be agnostic. We do not always have to have an opinion on every matter, and often it is better for us to keep an open mind. Keeping an open mind will make it easier for us to look for and appreciate new evidence. And it will make it easier for us to take seriously the opinions of other people. Of course, it is not always easy to stay open-minded, and we do not ordinarily have voluntary control over what we believe or do not believe. But a good critical thinker tries hard to remain agnostic until enough evidence has been collected to justify a belief.

1.5 KNOWLEDGE AND JUSTIFICATION

We have seen that knowledge is justified, true belief. To say that a belief is justified is to say that it is based or grounded on good reasons, that the believer has adequate or satisfactory reason to have that belief. But there are lots of different kinds of reasons to believe something, and it is worth distinguishing some of them so that we can focus on the kinds of reasons that critical thinking is concerned with.

It will help to have an example, so let us suppose that Jones believes that humans evolved from other living species, in something like the way current theories of evolution describe. We can ask three questions. (i) What kinds of reasons does Jones have for believing this? (ii) What kind of reasons is critical thinking concerned with? (iii) What is it for reasons of that kind to count as **good** reasons?

We should start by noticing a distinction between **producing** reasons and **sustaining** reasons. The producing reasons are the ones that made Jones believe it in the first place, whereas the sustaining reasons are the ones that his belief is now based

on. The producing reasons need not be the same as the sustaining reasons. Perhaps Jones first came to believe that humans evolved from other species because he heard it on a TV show that he has now long forgotten about, but continues to believe it because of the evidence he has since acquired in various science classes. In that case, the producing reasons are not at all the sustaining reasons. It is of course possible for the producing reasons to also be the sustaining reasons. No doubt, for the first few days after watching that show, the reasons that produced his belief also sustained it. But this does not have to be the case. I suspect that for many of our beliefs, the reasons that we had for forming them are not those that now sustain them. There is nothing wrong with this. Indeed, it is to be expected, I think, that as our evidence changes and grows this will affect the reasons we have for what we believe. But it is still important to keep the difference in mind when we are asking why someone believes something, since criticizing the reasons he originally had might be beside the point if those are no longer his reasons.

1.5.1 Emotional and Pragmatic Reasons

As I said at the outset, there are many different kinds of reasons to believe something. One can have **emotional** reasons to believe something. Maybe Jones believes that humans evolved from other species in part because believing it helps him feel at one with his natural environment, and this feeling brings him a deep sense of connectedness and meaning. Giving up that belief might cause a sharp emotional pain or rupture. Or maybe he believes it because he knows that believing it upsets his religious father, and he derives satisfaction in being rebellious. Or maybe that belief fits into a larger web of beliefs he has about his place in the Universe, and giving it up would damage the integrity or coherence of that web of belief in a way that would be hard for him to accept. Some of our beliefs are simply so fundamental that giving them up would cause a huge and unpleasant upheaval in our personal worldview, and the desire to avoid this can itself be a reason to keep the belief.

Some people have suggested that emotional reasons play a fundamental role in producing or even sustaining our moral or religious beliefs. Perhaps Jones' belief that lying to others is wrong stems from feelings of guilt he has when he lies, or from feelings of shame he has when he has to admit to others that he has lied. Perhaps he believes that God exists partly because it brings him deep comfort. Moral and religious beliefs do not have to be produced or sustained by emotional reasons. And I suspect that emotional reasons play a role in many of our ordinary "factual" beliefs. It is important to us to feel balanced, and sometimes the need to continue to feel balanced plays a role in explaining why we continue to believe what we do.

We have been considering emotional reasons to believe something that involves only the believer himself. But one can also believe something because of the way that belief relates one emotionally to one's **community, culture, or heritage**. Having a strong sense of community and tradition is extremely important to us, and we should not underestimate the way it can influence and shape our view of the world. Perhaps Jones identifies with the scientific community and tradition and thinks that not believing in human evolution would force him to break with that community and that this break would be bad or painful. It is certainly true that many of the practices we

currently have are sustained, at least in part, in order to strengthen and nourish strong community bonds. Sometimes, our practices and beliefs are so fundamental not only to our own personal worldview but to our cultural and ethnic heritage that it is hard to see them as anything but natural and inevitable. It may seem to us that not maintaining them would be a kind of lunacy. (Sometimes, it is only by studying foreign practices and traditions that one can really appreciate and even identify one's own heritage and practices for what they are.) In this kind of case, it might be impossible to even question the beliefs or practices without causing substantial emotional pain.

Unlike epistemic reasons, emotional and pragmatic reasons for believing something are not reasons to think that the belief is true.

We can also have more purely **pragmatic** reasons to believe something. We might believe something because believing it makes it easier for us to achieve our goals or objectives. It might be that abandoning the belief would not cause us serious emotional pain of any kind, but that we find that maintaining the belief simplifies some part of our practical life. It is easier to get along if we believe it than if we question it, and so we continue to believe it.

1.5.2 Epistemic Reasons

We have been discussing reasons to believe something. But so far we have not discussed reasons to believe that something is true. Let us call reasons of that kind, ones that indicate that what we believe is true, **epistemic** reasons. Emotional reasons and pragmatic reasons are not epistemic ones. Even if it is true that abandoning some belief would cause substantial pain or practical difficulty, it does not follow that these reasons for sustaining the belief are also reasons to think that the belief is true.

This is clear, I think, in the case of Jones' belief that humans evolved from other species. The emotional or pragmatic reasons he has to believe that have nothing at all to do with whether the belief is true. Indeed, the truth of his belief has nothing at all to do with his emotions, or his community, or even with him. If it is true that humans evolved from other species, then this is true regardless of whether Jones even exists. Whether it is true depends on events that occurred long before he was born. Epistemic reasons are reasons to think that a belief is true or accurate, that it captures the facts properly, and they need to have no special bearing on our emotions or practical challenges. Indeed, as we all know, sometimes the truth is painful or uncomfortable.

CRITICAL THINKING AND THE PRACTICE OF MEDICINE

In an article in *The New Yorker*, Dr. Jerome Groopman wrote about how doctors sometimes let emotions get in the way of their examinations. He described a case in

which he missed a patient's serious infection because he did not want to embarrass his patient by doing a thorough physical examination. Had he looked carefully, he would have found a serious infection. Luckily, another doctor discovered the infection and it was treated. Groopman's mistake, in this case, was not that he based his beliefs on his emotions, but that he allowed his emotions to get in the way of performing the kinds of tests and examinations he knew were needed before he deciding whether the patient was healthy. He allowed himself to form a belief that he knew was based on incomplete evidence. The consequences of this mistake might be just as bad as the consequences of forming beliefs on the basis of emotions. He wrote that this case illustrates an important lesson, neatly summarized by his friend Pat Croskerry: "Currently, in medical training, we fail to recognize the importance of critical thinking and critical reasoning. The implicit assumption is that we know how to think. But we don't."

Epistemic reasons are at the heart of critical thinking. Think back to the traditional philosophical definition of knowledge as justified true belief. Since knowledge requires *true* belief, the kinds of reasons involved in justification are epistemic ones, not emotional or pragmatic ones. The requirement that to know something one's belief must be justified means that one must have good epistemic reasons for the belief. That means that one must have **sufficient** and **acceptable** evidence—we will look much more closely at what each of those things mean in later chapters. Basing or sustaining a belief on emotions or on practical considerations cannot lead to knowledge, since these kinds of reasons to believe something are the wrong kind. To know whether humans evolved from other species, it is not enough to have strong emotional or pragmatic reasons; one must have strong reasons for thinking *that it is true* that humans evolved from other species. This does not mean that one cannot also have emotional or pragmatic reasons. Jones' belief that humans evolved from other species might be justified enough for knowledge even if it is sustained in part by emotional or pragmatic reasons, so long as he also has sufficient epistemic reasons to believe it. But if one is striving for knowledge, then one cannot rest content merely with emotional or pragmatic reasons, since they have nothing essentially to do with whether the belief is true, and truth is essential to knowledge. A belief that is based solely on emotional or pragmatic reasons cannot possibly count as knowledge, even if the belief is true. Knowledge requires strong epistemic reasons.

A belief that is based solely on emotional or pragmatic reasons cannot be knowledge, even if the belief is true. Knowledge requires epistemic reasons.

Deciding what to do: deciding on means and deciding on ends

Deciding what to do involves two separate decisions. The action's intended goal—its **end**—is one thing and the steps to achieve that goal—the **means**—are quite another. Here are some examples.

I will enroll in University in order to get an education.

I will dedicate all of June and July to writing my book in order to get it done.

I will put a pot of boiling water on in order to make dinner.

Thinking critically about what to do requires having reasons to pursue those ends and reasons to choose those means.

Reasons for pursuing some end are reasons for thinking that the end is good, or valuable, or worthwhile. I decided to write this text book because I believed that writing it would be a good thing to do, and I had reasons for this. You decided to go to college or university because you thought it would be a good thing to do, and you surely had some reasons to think that. Reasons to think that something is good are a special kind of reason, and we will look at them in more detail in a later chapter.

Once you decide on your goal or your end, you need to decide how to make it happen. This is deciding on the means to achieve that end or goal. Reasons to adopt some means are reasons for thinking that those means will succeed. I decided to dedicate one summer to working on the book because I thought this would be a good way to get the writing done. I decided on that means because I thought it would succeed. You decided to enroll in university because you believed it was an effective means to your goal of getting a university education.

1.5.3 Emotions and Evidence

Being a critical thinker means that our beliefs should be based on epistemic reasons, and not on emotional or pragmatic ones. Basing one's beliefs on emotions rather than on epistemic reasons is a mistake. Emotions can also make it difficult to collect the evidence we need for our belief to be justified, or even from investigating further. Emotions can also get in the way when we identify too much with our own opinions and beliefs or with our own methods for collecting or evaluating evidence. If I become too emotionally attached to my beliefs and opinions, then I may react negatively when someone asks me for my reasons, or when they raise objections to my belief or when they state their own alternative beliefs. I might feel that they are criticizing me and not just my beliefs. The same is true if I am asked to defend my assessment of the evidence or my use of different methods for collecting evidence. If I come to identify too closely with these particular methods for assessing and collecting evidence, if I come to think of my value as a researcher as tied into their value, then I will react to criticisms of them as if they were criticisms of me and my judgment. This feeling of being under attack might make me feel defensive, and this can prevent me from thinking critically about the issue at hand. The same is true when I ask someone for his or her reasons. This sort of question is easily taken as aggressive or combative, even when the intention is simply to consider the issue from all sides as thoroughly as possible.

PRACTICAL STRATEGY: DO NOT PERSONALIZE REASONS

Reasons and evidence do not belong to anyone; they are **universal**. And whether they are good has nothing to do with who accepts them; they are **objective**. To avoid personalizing reasons, replace the following:

- a. What evidence do you have?
- b. What are your reasons?
- c. Why do you believe that?

with the following impersonal ones:

- a'. What evidence is there?
- b'. What reasons are there to believe that?
- c'. Why should we believe that?

Knowing how to **distance** oneself from one's beliefs and opinions in order to think critically about them is not easy. It is one of the hardest things to achieve. But the best way to avoid this feeling is making sure that one's beliefs and opinions are based on sufficient evidence. Again: **think twice; decide once**. Another strategy is to avoid talking about "my reasons" or "your reasons" and to talk instead of "the reasons" or "some reasons." This makes sense anyway, since reasons and evidence are not owned or possessed by anyone: they are universal and objective. Instead of asking "What are your reasons for believing that?" which can come across as confrontational, ask, "What reasons are there to believe that?" which makes the question sound less confrontational. Instead of asking, "What is your evidence?" you can ask, "What evidence is there for that?"

Critical thinking requires that we have good epistemic reasons for our beliefs and decisions. Sometimes, in order to decide what to believe or do, we need to **acquire new evidence**. We have several sources of evidence at our disposal, several ways of gaining new information on which to base our decisions about what to believe or what to do. We can gain new evidence through direct observation, testimony, measurement, testing, and experiment. In Chapter 4, we will compare these different sources of evidence and consider when they provide evidence or information that is acceptable. Sometimes, we can decide what to believe or what to do by **drawing conclusions from the evidence we already have**. We can rely on what we already know to compare things or groups of things to see how they are analogous. We can reason about what else has to be true given what we already know or believe that we know, and we can reason about what alternatives the evidence that we have rules out. In Chapters 5 and 6, we will compare these different ways of drawing conclusions

from the evidence we already have, and study some methods for telling when our reasoning is good.

1.6 GOOD REASONS ARE SUFFICIENT AND ACCEPTABLE

A belief is justified enough for knowledge only if it is based on good reasons. Two features are essential to good reasons. First, the reasons have to be **sufficient** to support the belief. Second, the reasons have to be **acceptable**. In later chapters, we will have a lot to say about both these features of good reasons. But let us now take a quick look at each element.

Imagine that you were on a jury for a murder trial. Suppose that Jones has been charged with the murder of Smith. During the trial, the prosecution brings forward several witnesses who give testimony about what happened the night of the murder. As a member of the jury, you have to decide whether the testimony really proves, beyond a shadow of a doubt, that Jones murdered Smith. There are two very different questions you need to ask about the evidence the prosecution has presented. First, you need to ask whether the evidence, if true, would prove that Jones murdered Smith. That is the question of whether the evidence is sufficient. Second, you need to ask whether the evidence is accurate, whether it comes from trustworthy sources. That is the acceptability question.

Suppose, in particular, that Hamish testifies that he saw Jones holding the murder weapon and standing over Smith's body. You need to ask yourself two questions about Hamish's testimony: first, would it (together with the rest of the evidence the prosecution put forward) show that Jones really did murder Smith; second, is Hamish a reliable witness? These two questions are independent of one another, in the sense that you can answer Yes to either one while answering No to the other. Let us look at these in more detail.

First, a belief is justified enough for knowledge only if it is based on **sufficient** evidence; this just means that it has to be based on **enough** evidence. In deciding what to believe or do we need to make sure that we have collected enough evidence. This is the idea behind the legal requirement that a jury can find the defendant guilty only if they have proof beyond a reasonable doubt. In deciding whether a defendant is guilty, it is not enough that the prosecution present *some* evidence of guilt. It needs to present enough evidence. Ideally, it should provide enough evidence to guarantee that the verdict the jury reaches is the right one. The evidence, in that case, would make it impossible for the verdict to be mistaken. The jury could not go wrong if it made its decision on the basis of that evidence. What is true of juries is just as true of us as we try to decide what to believe and what to do. We can sometimes collect this ideal amount of evidence, but we often have to make do with less than this. In chapter 3, we will study the ideal amount of evidence and consider some strategies for telling how close we are.

A belief is justified enough for knowledge only if it is based on evidence that is both sufficient and acceptable.

Second, a belief is justified enough for knowledge only if it is based on **acceptable** evidence. In a perfect world, we would only rely on evidence that we knew for a fact was true or accurate. But we are rarely in that kind of situation. Usually, we have to make our decisions on the basis of information that we are pretty sure about, but not one hundred percent convinced of. Usually, the acceptability of some piece of evidence depends on where it came from, on its source. Some sources of evidence are better than others for certain kinds of beliefs, and it is always an important question whether a given source of evidence is trustworthy in a particular case. Direct visual observation is a good source of evidence for beliefs about the colors of objects but it is not a good source of evidence for beliefs about other physical properties of objects. You can often tell just by looking whether something is brown or red, but it is pretty much impossible to tell just by looking whether something will dissolve when placed in water. You can tell by looking whether someone is tall or male, but not whether they are a lawyer or a doctor. You can sometimes tell by looking whether a bridge needs to be repainted but not whether the bridge is at risk of collapse. A lot of care is needed when we are deciding what to believe or what to do to ensure that our decisions are based on acceptable evidence.

1.7 WHEN EVIDENCE CONFLICTS

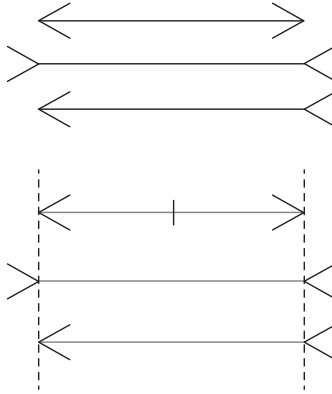
Sometimes, one piece of evidence we have conflicts with another piece of evidence we have. There are two ways that evidence can conflict and a good critical thinker keeps an eye out for both sorts of conflict.

Two pieces of evidence **directly** conflict when one indicates that something is true and the other indicates that it is false.

Sometimes, two pieces of evidence point in opposite directions. Let us call that a **direct** conflict. Here is an example. Suppose Susan sees what look to her like bear tracks on the riverbank. This is evidence that a bear is nearby. But suppose that her very experienced guide says that no bears have been in the area for 20 years. The guide's testimony is evidence that no bear is nearby. In this case, there are two pieces of evidence that conflict: one indicates that a bear is nearby and the other indicates the opposite. Or imagine that during a trial one witness says that Jones was at the hotel, where the murder occurred and another witness claims that Jones was at home that night. Again, these two pieces of evidence conflict, since they point in opposite directions. These are examples of direct conflict between pieces of evidence.

In this sort of case, one of the pieces of evidence will have to be misleading. Either the tracks are not bear tracks, or else the guide is mistaken. But since Susan does not know, the wise thing is to withhold judgment about whether a bear definitely is present. Likewise, at least one of the two witnesses is mistaken—they cannot both be right. But if the members of the jury cannot figure out which one is mistaken, the wise thing to do is to withhold judgment.

Here is another case where two pieces of evidence are in direct conflict. Consider a case of a persistent visual illusion, like the Müller-Lyer Illusion, presented below.



When we look at the drawing, it looks like the middle line is quite a bit longer than either the top or the bottom lines. But if we measure them with a ruler, we will find that they are in fact of the very same length. We are now in a situation where our evidence conflicts. Our eyes tell us one thing; our measurement tells us another. The observational evidence directly conflicts with the measurement evidence. Something has to give. In this case, we have figured out that the evidence we get from observation is misleading, and that the evidence we get from measurement is accurate. (Part of what is fun about this illusion is that it is *persistent*: the middle line still looks longer even when we know that it is not!)

Sometimes when a piece of evidence we have is in direct conflict with another piece of evidence we have, one of the pieces of evidence will be stronger than the other. In that case, let us say that first piece of evidence **overrides** the second. It is not easy to say what makes one piece of evidence stronger than another, but we will return to this question later on. But this is what happens in the illusion case. For the measurement evidence is stronger than the observational evidence. This means that it would be wrong to rely on the observational evidence in this case, since we know we have better evidence from measurement.

When two pieces of evidence directly conflict, if one is stronger than the other, then the stronger evidence **overrides** the weaker evidence. It is unreasonable to rely on overridden evidence.

When we decide what to believe or what to do, we have to make sure that we consider all of the evidence we have or can get and we have to make sure that the evidence we decide to go with is not overridden by other evidence.

CRITICAL THINKING MISTAKE: PRIVILEGING CONFIRMING EVIDENCE

It is a mistake to assume that evidence that confirms what we already believe is better than new evidence that conflicts with it. This is a mistake because what we already believe may be false, and if we were to consider the disconfirming evidence more carefully we would see this and change our minds. A critical thinker is always willing to reflect on whether her beliefs are based on sufficient and acceptable evidence.

One piece of evidence **indirectly** conflicts with another when the first indicates that the second is from an unreliable source.

Evidence can conflict in another way. To see it, let us consider a different story. Suppose that Mark takes his daughter's temperature using an electronic thermometer. The thermometer reads 98°F. This is some evidence that the daughter does not have a fever. But suppose that Mark then remembers that the batteries are dying in the thermometer. This is some evidence that the thermometer might be giving a misreading, that maybe the thermometer is not working properly. Here again, we have a case where the evidence conflicts. But the two pieces of evidence here are not in direct conflict. For the evidence that the thermometer is broken is not evidence that the daughter **does** have a fever. Rather, it is evidence that the reading is not acceptable evidence. When one piece of evidence indicates that another piece of evidence is not acceptable, let us call that an **indirect conflict**.

When one piece of evidence indirectly conflicts with another, if the first is stronger, then it **undermines** the second. It is unreasonable to rely on undermined evidence.

If one piece of evidence indirectly conflicts with another, and the first piece is stronger than the second, then the first piece of evidence **undermines** the second piece of evidence. For example, suppose that Wayne testifies that he saw Jones pull the trigger. That is some evidence that Jones is guilty. But suppose that Simon testifies that Wayne has a grudge against Jones and would lie on the witness stand. In this case, Simon's testimony indirectly conflicts with Wayne's. Suppose, further, that we have really good reason to trust Simon. In that case, his testimony is stronger than Wayne's testimony. So Simon's testimony undermines Wayne's testimony. This does not mean that we think that Wayne testified *falsely*. It just means that we should not trust what he says. We should remain agnostic, undecided. We should withhold judgment until more evidence is in.

CRITICAL THINKING MISTAKE: PRIVILEGING AVAILABLE EVIDENCE

It is a mistake to assume that evidence that we currently have is better than evidence that we might collect. This is a mistake because if we were to collect more evidence we might discover some that overrides or that undermines the evidence that we have. It might be that our current evidence is the best we can get, but we will not know this until we try to collect more. Crucially, even if we have excellent reason to rest content with the evidence we have, we should always keep an open mind that we might uncover new evidence that will override or undermine the evidence we now have.

A good critical thinker withholds belief until enough evidence is collected.

Sometimes we may have reason to question all of the evidence provided by some source. For example, the Müller–Lyer illusion shows that we have to be very careful when we rely on evidence provided by our vision, at least when we are trying to decide when two lines are of the same length. Vision, it seems, can be quite unreliable on this kind of topic. But it would be wrong to respond to the Müller–Lyer illusion by believing the opposite of what our eyes tell us. The proper response is to withhold judgment until more evidence is in. “It looks like the middle line is longer, but let’s measure it just to make sure.” When we decide what to believe or what to do we need to make sure that the other evidence that we have does not undermine the evidence we are relying on. Once again: think twice, decide once.

EXERCISE 3

- A.** Comprehension questions. (When you answer these questions, pretend that you are explaining or teaching the answer to a friend who is not in the class. Doing that will force you to put in LOTS more background information than you would if you were trying to answer them for your instructor.)
1. What is the traditional definition of knowledge?
 2. What is the difference between Realism and Relativism?
 3. Could one be a realist and a relativist about biology? Why or why not?
 4. Why does the existence of disagreement in some subject area not show that Relativism is true of that area?
 5. Why is Realism the default attitude to take in a subject area?
 6. How are freedom of action and freedom of belief alike? How are they different?
 7. What is an example of an emotional reason to believe something?
 8. Why are emotional reasons not good enough for knowledge?
 9. List two ways in which emotions can be obstacles to critical thinking.

10. What is the difference between acceptable reasons and sufficient reasons? Give an example of reasons that are sufficient to believe something but not acceptable.
11. Could evidence be overridden without being undermined? Explain using an example.
12. The traditional philosophical definition of knowledge says that knowledge is justified true belief. When presented with a definition that analyzes some idea or concept into several parts or elements, it is a good idea to investigate how those elements are related to one another. To do this, one asks whether it would be possible to have two of the elements without the third. Is it possible for someone to have a belief that is justified (i.e., based on epistemic reasons) even though the belief is not true? Try to construct stories to test whether these elements are independent?

1.8 CRITICAL THINKING AND PERSONAL AUTONOMY

We have seen that critical thinking is aimed at knowledge. It pretty much goes without saying that knowledge is valuable. For one thing, since knowledge requires truth, if we know something then we have the truth on our side. So critical thinking, to the extent that it can help us gain knowledge, can also save us from making mistakes. And that is a good thing. But thinking critically as we decide what to believe or do is valuable for a different, and in some ways more important, reason. Thinking critically is essential to making up one's own mind, and this is fundamental to being an autonomous person. Let us explore this by looking first at the differences between a belief and a prejudice.

1.8.1 Belief and Prejudice

Knowledge is valuable because of its links to truth. But as we saw, knowledge also requires justification, and justification is valuable because it makes the difference between having a well-reasoned belief and having a **prejudice**. And no one wants to be prejudiced. But what exactly is it to be prejudiced, and why is it so bad?

Usually when we talk about prejudices we have in mind hurtful views about race, religion, or ethnicity. We say that people who treat Asians or Catholics less well than they treat Europeans or Episcopalians are prejudiced against them. Some people used to believe that Irish immigrants were lazy, could never keep a job and did not care about supporting their families. Irish immigrants were discriminated against as a result of these prejudicial views. Of course, those beliefs about Irish immigrants were totally false, and it is even hard for us now to imagine how anyone could have believed them in the first place. (Unfortunately, it is always easier to spot someone else's prejudices than it is to notice one's own, and there is little reason for optimism that we are any less prejudiced than are the rest of our fellow humans.)

But what made those beliefs prejudices was not that they were false. There has to be a difference between a belief that is false and belief that is a prejudice. Not every

false belief is a prejudice. People used to believe that the Sun orbited the Earth, but we do not think that this false belief made them prejudiced. This was a mistake, not a prejudice. And isn't it possible that a prejudicial view could actually turn out to be true? Suppose I see in the newspaper a picture of someone who has been arrested for some crime and I immediately conclude that he is guilty just from the look on his face. I think we would say that my belief in his guilt was a prejudice. But what if it turned out that he was in fact guilty? Wouldn't we still say that my belief was prejudicial even though it was true? So it seems that whether a belief is a prejudice has nothing to do with whether it is true or false.

One clue to the nature of prejudice comes from the word itself: a prejudice is a **prejudgment**. To prejudice someone or something is to form a judgment or belief about them before enough of the facts are in, before one has enough evidence. Taken literally, a belief is a prejudice when it is not based on good epistemic reasons. My belief in the defendant's guilt was a prejudice because it was not based on good enough reason, and this is so even though the belief was in fact true. The members of a jury are asked not to prejudge the question—not to decide whether the defendant did it—before all of the evidence has been presented. Since critical thinking can help us to make sure that our beliefs are based on good epistemic reasons, critical thinking can also help us to avoid being prejudiced.

1.8.2 Making Up Your Own Mind

But why should we avoid prejudice, especially if prejudice is compatible with being right? This might sound like a silly question, but answering it can help us to see one of the deeper values to critical thinking. One reason to avoid prejudice is that we want to make up our own mind and being prejudiced is the very opposite of making up your own mind.

If we let our beliefs get formed before we have had a chance to examine all the evidence, then it is as if we have lost control of our beliefs and views. Forces and influences that are outside of us would in that case form our beliefs and opinions for us. My spontaneous belief that the arrested man was guilty was not the result of careful deliberation by me. The belief just came over me. I was not responsible for it. In a real sense, I did not **make** up my mind to believe that he was guilty; rather, my mind was made up for me. But that is not how I want my beliefs and opinions to get made. I want them to be *my* beliefs and opinions, ones that I choose and can take responsibility for having, not ones that were simply given to me or (even worse) forced on me. And this is so even if the prejudicial beliefs turn out to be true.

Making up one's own mind is part of what it is to be **autonomous**. Being autonomous means exercising the power to determine one's self, to decide on one's own what to do or what to believe, what kind of life to live. Because critical thinking demands reasons and requires us to be reflective as we decide what to believe and what to do, thinking critically is crucial to exercising our ability to determine our own minds, to decide for ourselves.

Sometimes, making up one's own mind can mean disagreeing with others or even abandoning beliefs and practices that one was born into. Making up one's own mind about religion or politics can sometimes cause pain and lead to separation from those

we love. This may be unavoidable if one finds that those practices are not based on good enough reasons, and making the break can require a good deal of courage. But it is not inevitably like that. Examining one's beliefs and practices can also reveal deep and even new reasons for keeping them, and this process can strengthen one's allegiance to them and deepen one's bonds to others who share those beliefs and practices. The benefits of making up one's own mind far outweigh the risks.

We have been discussing the responsibility that we have to make sure that our beliefs and practices are grounded in good reasons. In a famous essay, William Clifford argued that we also have a responsibility to others to make sure that we have good reasons to believe what we do. His reason was that beliefs make a difference to action. We act on our beliefs, and if our beliefs are not based on good enough reasons, then we run the risk that our actions will cause unintended harm. Clifford illustrated this point with a story about a wealthy but penny-pinching shipowner, whose ship full of immigrants was ready to set sail. The shipowner had good epistemic reason to think that the ship was not sea-worthy but was reluctant to pay for the needed repairs and to put up with costly delays. Eventually, he convinced himself that the ship was safe. He let his pragmatic and emotional reasons overpower his epistemic ones. Tragically, he was mistaken and the ship sank, killing everyone on board. Clifford argued that not only was it wrong for the shipowner to let the ship sail, it was wrong for him to believe as he did that it was safe, since his belief was not based on adequate grounds. It is wrong, Clifford insisted, to believe something on the basis of wishful thinking, or for nothing but self-interested reasons.

But suppose that the ship had not sunk. Suppose that the crew and passengers had gotten lucky and the ship made it safely to America. Still, Clifford argued, it would have been just as wrong for the shipowner to allow the ship to sail and to have believed as he did that the ship was safe. Suppose finally that the ship was in fact quite safe, and that the shipowner's initial concerns about its safety were not well founded. Still, if the shipowner ignored those concerns and convinced himself that the ship was safe in hopes of saving a few dollars, Clifford argued, it would still have been just as wrong for him to have allowed the ship to sail and for him to have believed as he did that the ship was safe. It would have been wrong for him to have believed that even though his belief would have been true. It would have been wrong because his belief would have been based on inadequate evidence. It is, Clifford concluded, "Always and everywhere wrong to believe on inadequate evidence." To the extent that critical thinking can help us to ensure that our beliefs are based on strong epistemic reasons, it can help us to fulfill the obligations that derive from the ethics of belief.

CHAPTER SUMMARY

Critical thinking is reasonable and reflective thinking aimed at deciding what to believe or what to do. When we try to decide what to believe or what to do, we are trying to gain knowledge. We want to know the facts or the best way to achieve our goals. Knowledge is justified true belief. A belief is justified only when it is based on sufficient and acceptable evidence. Relying on such evidence not only reduces the risk of error; it also helps us to avoid prejudice. Avoiding prejudice

is essential to making up one's own mind about what to believe and what to do. Critical thinking provides practical methods and standards for helping us to make sure that our beliefs are based on adequate epistemic reasons. In this way, critical thinking helps us to become autonomous.

CHAPTER EXERCISES

- A.** Comprehension Questions. (When you answer these questions, pretend that you are explaining or teaching the answer to a friend who is not in the class. Doing that will force you to put in LOTS more background information that you would if you were trying to explain the material to your teacher.)
- a. What is the difference between a prejudicial belief and a false belief? Use an example to illustrate your answer.
 - b. Could a prejudicial belief be true? Explain, using an example.
 - c. Could believing something on the basis of emotions alone make one autonomous? Why or why not? Use an example to illustrate your answer.
 - d. List five character traits that you think are characteristic of an ideal critical thinker. Give an example of each one.
 - e. Suppose that Jones is a universal relativist (i.e., a relativist about all subject matters) and that Smith is a universal realist (i.e., a realist about all subject matters). Could they nonetheless agree on all the facts? What exactly would they disagree about?
 - f. Consider the following proposed definition: to lie is to deliberately say something that is false and that one believes to be false in order to mislead another person. What are the elements of this proposed definition? Are those elements independent of one another?
 - g. Some philosophers claim that it is wrong to lie to someone because it prevents them from making up their own mind. Construct a story about Jones (or your favorite character) to illustrate this point. Do you agree that this is part of what makes lying wrong?
 - h. Thomas Jefferson is supposed to have said that all knowledge begins with book knowledge; that is, with knowledge that we get from reading books or from trusting what other people say. Could this be right?
- B.** In the following texts, reasons are given for some belief or practice. Explain whether the reasons are epistemic ones.
- a. Sally believes that it is wrong to eat meat. She once watched a documentary on the methods used to kill cows, and it made her so sad that she immediately became opposed to eating meat.
 - b. The glass of milk is empty. I can see it with my own eyes that it is.
 - c. The glass of milk is empty. I cannot see it, but my mother just told me that it is.
 - d. We have to hold the party on Christmas Eve, because we have always held it then.

- e. John believes that the sofa will fit up the stairs. He first measured the sofa and then the stairs, and decided that it would go up easily if tilted on its side.
 - f. Ashanti believes that Senator Doolittle's proposal is not cost effective. She finds that politicians are such hypocrites that she disagrees with everything they propose.
 - g. Robert believes that his car will not last much longer. He knows several people who own the same make of car and none of them lasted as long as his has lasted. So he figures that his car will not last much longer.
 - h. Susan believes that birds are a kind of dinosaur. She does not remember how she first came to believe it, but has decided to believe it until she finds some contrary evidence.
 - i. John thinks that smoking causes cancer. He believes it because his mother and two aunts died of cancer after smoking all of their lives.
- C. In each of the following, several epistemic reasons are given to believe something. Which is the strongest reason? What makes it stronger?
- a. John, Susan, and Terry all believe that the bank robber was a male. John was there during the robbery and saw the robber. Susan read about the robbery in the newspaper. Susan told Terry about the robbery.
 - b. John and Susan both believe that the acid caused the chemical reaction. John read in a textbook about the likely causes of such a reaction. Susan performed several experiments to rule out other possible causes.
 - c. Susan and Terry both believe that their checking accounts are overdrawn. Terry got a phone call from his bank telling him about his balance. Susan noticed it when she was balancing her checkbook last night.
 - d. John and Susan believe that some early settlers in New England suffered real hardships. John read some original diaries written by early settlers. Susan saw a documentary on TV.
 - e. John and Susan both believe that building a new bridge will greatly reduce the current traffic problems. John based his belief on a comparison of the proposed bridge and the traffic problems to those in other cities. Susan believes it because she heard the city planners claim that the bridge would reduce traffic problems.
 - f. John and Susan both believe that raising the minimum wage would lead to higher unemployment among the very poor. John believes it because he thinks that it follows from what he learned in his economics class. Susan believes it because she works in an unemployment office and has seen the unemployment lines grow after the wage has been raised in the past.
- D. In (a) in exercise (C), if the belief had been that the robber was a male with a long criminal record, then Susan's belief would have been better justified than John's, since it is hard to tell just by looking whether someone has a criminal record, but this is the kind of information a newspaper report would get right. For each of the other questions in (C), change the shared belief but not the kind of evidence each character relied on, so that the other person's reasons are stronger.

1.9 CRITICAL THINKING IN PRACTICE

1.9.1 Critical Thinking Mistakes

This book is intended as a practical guide to deciding what to believe. In later chapters we will discuss some strategies and standards that can help us to make sure that our decisions about what to believe or do are based on good epistemic reasons. As we go along, we will draw attention to some familiar mistakes, sometimes called “fallacies.” Identifying them will help us to avoid them in our own thinking and to spot them in other people’s thinking. Seeing why they are mistakes will help us know what to look for as we try to find good epistemic reasons for our decisions. All of the mistakes are collected together at the end of the book, for quick and easy reference.

Personalizing Reasons. It is a mistake to personalize reasons by treating them as if they belonged to someone. That is a mistake for two reasons. First, epistemic reasons are universal: if they are reasons for me to believe something then they are equally reasons for anyone else to believe it too. Second, epistemic reasons are objective: whether a piece of evidence is sufficient or acceptable is an objective matter. It has nothing to do with me or with anyone else. Personalizing reasons can obscure the fact that they are universal and objective. It can also allow emotion to get in the way of thinking critically if one identifies too much with one’s own reasons or if one rejects reasons just because someone else accepts them.

Appeal to Relativism. It is a mistake to just assume that truth is relative. This is a mistake because we always need to have good reasons for our beliefs, including our belief that Relativism is the right attitude to take toward some subject matter. Relativism with respect to some subject matter is the view that the facts in that area are in some way dependent on our beliefs about them. Relativism might be the right attitude to take toward such topics as what is humorous or what is tasty. But for most topics, even religious and moral ones, it is best to assume that Realism is the appropriate attitude, unless one has powerful reasons not to. For most topics, in other words, it is wrong to assume that what is true for me might not be true for you, or that what is true for our community or culture might not be true for others. Truth is the same for everyone.

Sometimes, an appeal to Relativism will be used as attempt to bring a discussion to an end. One person, perhaps tired of the debate or feeling that they are on the losing side, will say to the others: “Well, I’m entitled to my view and you are entitled to yours.” This kind of response is fine if what is intended is that everyone is allowed to make up their own minds about what to believe or do. But if the point is that we can both be right even when we disagree, then this is a mistake that we should avoid, unless there is excellent reason to think otherwise.

Appeal to Emotion. It is a mistake to base our beliefs only on our emotions. This is a mistake because how a belief makes us feel is not evidence that the belief is true, and a belief should be based on evidence that it is true. For a belief to be justified enough for knowledge it must be based on good epistemic reasons. Epistemic reasons are reasons to think that the belief is true. Emotional reasons are not epistemic ones. How a belief makes us feel has nothing to do with whether the belief is true. As

we have already noted, critical thinking does not aim to eliminate emotion from our decision-making. I doubt this would be worthwhile even if it were possible. Many of our beliefs are so fundamental to our deepest conceptions of ourselves, of our culture or our place in the Universe that the pain involved in abandoning them would be too great to bear. It is fine for our beliefs to have or even constitute these emotional supports, so long as they also have sufficient support from epistemic reasons. But it is a mistake to base our beliefs on nothing but emotional reasons. We also saw that it is a mistake to allow emotions to prevent us from collecting or assessing the evidence we need to make the decisions we must.

Privileging Confirming Evidence. It is a mistake to assume that evidence that confirms what we already believe is better than evidence that conflicts with it. This is a mistake because what we already believe may be false, and if we were to consider the disconfirming evidence more carefully, we would see this and change our minds. A critical thinker is always willing to reflect on whether her beliefs are based on sufficient and acceptable evidence.

Privileging Available Evidence. It is a mistake to assume that evidence that we currently have is better than evidence that we might collect. This is a mistake because if we were to collect more evidence we might discover some that undermines or overrides the evidence that we have. It might be that our current evidence is the best we can get, but we will not know this until we try to collect more. Crucially, even if we have excellent reason to rest content with the evidence we have, we should always keep an open mind that we might uncover new evidence that will override or undermine the evidence we now have.

AN EXAMPLE OF APPEALING TO TRADITION

When I was a child, my family lived in England. The houses in our neighborhood all had their water pipes running up the outside of the house, instead of inside the exterior walls. Predictably, the pipes froze and burst every winter and workmen had to be called to repair them. My father asked the landlord why the pipes were on the outside instead of inside the walls. The landlord explained: Well, if they were on the inside, then we could not get to them when they froze. The landlord had accepted the traditional way of thinking of the problem: he saw it as an access problem, best solved by putting the pipes on the outside walls. Having been raised in Canada, my father saw it as a freezing problem, best solved by putting the pipes inside the heated space of the house. The landlord's mistake was in not asking whether the traditional way of thinking was the right way.

Appeal to Tradition. It is a mistake to believe something just because that belief is traditional. This is a mistake because the fact that a belief has a long history is not evidence that it is true, and it is a mistake to believe something without evidence that it is true. Being a critical thinker does not mean abandoning all of our traditional beliefs. It just means that we need to have good reasons to continue holding them.

1.9.2 Critical Thinking Strategies

This book is intended as a *practical* guide to deciding what to believe. As we go along, we will draw attention to some useful practical strategies or methods. These will all be collected into an appendix at the end, for quick and easy reference.

Look for Conceptual Relations. It is good to know how to look for relations among our concepts and ideas. We did this with Robert Ennis' definition of critical thinking as reasonable, reflective thinking aimed at deciding what to believe or what to do. The other was the standard philosophical definition of knowledge as justified, true belief. When an idea or concept is analyzed into several parts or elements, it is always a good idea to ask how those parts or elements are related to each another. To do this, simply ask yourself whether you can think of an example of something that has some of the elements but not others. For instance, we noticed that simple arithmetical calculations are a kind of thinking aimed at deciding what to believe but are not reflective because they do not require thinking about the method one uses. Whenever a concept or problem has elements or parts, ask: how are those parts related to one another?

Think Twice; Decide Once. To paraphrase the old carpenter's motto (measure twice and cut once): it is best to think twice and decide once. We know from psychological experiments that people are reluctant to change their minds. Once our opinions are set, it seems to take a lot to revise them. For one thing, people tend to privilege evidence that confirms their already existing beliefs over evidence that conflicts with it. They assume that evidence that conflicts with what they already believe is probably not reliable. For another thing, people tend to prefer the evidence they have to the evidence they would have to do something to get. To protect against these built-in obstacles to critical thinking, it is better to make sure that one has enough of the right kind of evidence before one makes a decision. It is better to think twice and decide once, than to have to go back and revise one's decisions.

1.9.3 From Theory to Practice: Applying What We Have Learned

One goal of this book is to provide you with the conceptual tools and the practical strategies you need to become a strong critical thinker. Thinking critically requires having an appropriate vocabulary for describing and evaluating the decisions we need to make, as well as having the strategies and methods needed to make sure that our decisions are based on the right kind of evidence. But book learning only goes so far. Becoming a critical thinker requires using these concepts and skills in our own life. We can and should think critically about our own decisions and values, about our classes and studies and about our workplace experiences. The following set of exercises will continue throughout the book, as we acquire new concepts and learn new strategies. They are designed to help you "transfer" what you learn in this class to the rest of your life. And as with everything, the more you put into them, the more you will get out.

1.9.3.1 Thinking Critically about Ourselves Good critical thinking begins at home. This means that we can practice the skills and strategies involved in thinking

critically by reflecting on ourselves and our own decisions and values. The self-examination exercise—which continues throughout the book—asks you to examine your conception of a good person. In this chapter, we will begin by outlining the exercise.

- a. List five or six traits that you think are essential to being a morally good person. You can be as specific or as general as you like. But it is good to pick traits that are varied as you can. Some examples: honesty, loyalty, generosity, and faithfulness.
- b. Pick one of them to work on for the remainder of the text. Try to define it in other terms, as if you were explaining it to someone who was unfamiliar with it. Think up a story in which it is illustrated.
- c. Explain why you think that trait is essential to being a morally good person. Try to make sure that your reasons are epistemic ones, as opposed to emotional or pragmatic ones.

1.9.3.2 *Thinking Critically in the Classroom* Every university and college is in the business of producing critical thinkers, and each of their departments and programs are charged with trying to improve the critical-thinking skills of its students. Geology departments want to do more than just teach their students geological facts; they want to teach them how to think critically about geology. Business programs want to help their students become adept at thinking critically about business problems and solutions, and not just to teach them business concepts and practices. This exercise, which will continue throughout the text, is designed to help you see where critical thinking can fit in with your studies.

- a. In your own words, and with as much detail as you can, list five or six things in your program where critical thinking is required in learning. Some examples: memorizing definitions and concepts; learning historical events and explanations; performing measurements; collecting evidence; doing factual research; writing essays; performing experiments; evaluating performances and works of art; analyzing texts and arguments. As clearly as you can, and using the concepts we have studied in this chapter, explain in what way critical thinking is required in each of them.
- b. Using the textbooks for your courses as a guide, compile a list of the five or six most important concepts for your field of study. These will be the concepts that are used most broadly to formulate the claims and to frame the subject matter. They should not be the same as the concepts in another field. For example, the concept of a cell is essential to biology, but not to economics; the concept of demand is crucial for economics, but not to history.
- c. The only way to succeed in your studies is to study hard. Critical thinking can help with this. List five or six things that you do as part of your studying and describe how they involve critical thinking, in the sense that we have been discussing in this chapter. Some might involve decision making while others involve reflection.

1.9.3.3 Thinking Critically at Work Studies show that employers value an ability to think critically more than just about any other trait in an employee. They want their workers to be able to think critically about both day-to-day problems as well as about broader organizational performance and plans. Many employers even provide critical-thinking training as an element in management development. This exercise, which will continue throughout the text, is designed to help you see where critical thinking can be applied at work.

- a. Thinking about your workplace, list five or six tasks that you or your co-workers are regularly asked to perform that require thinking critically in the sense that we have been discussing. They can be as simple or complex as you like, but again it is best to make the list as varied and specific as possible. (A hint: start with very general tasks, and then analyze them down into smaller more discrete tasks.) Some examples: dealing with customer complaints; regular communicating with co-workers and supervisors; ordering and stocking inventory; dealing with late or delinquent bills; implementing or evaluating systems and procedures.
- b. Pick one of those tasks, and answer the following.
 - (i) What is the task? Be as detailed and specific as you can.
 - (ii) In what ways does it require critical thinking? Which of the elements of critical thinking does it require?
 - (iii) What information do you usually need to perform the task and how do you usually collect and assess that information?
 - (iv) If you could implement a change that would improve or enhance your performance of that task, what would it be?
 - (v) What obstacles are there to thinking critically in the performance of that task? Be as specific and detailed as you can.