



A PRACTICAL GUIDE TO CRITICAL THINKING

Deciding What to Do and Believe

DAVID A. HUNTER

Ryerson University
Department of Philosophy
Toronto, Ontario, Canada

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*For Jane,
my beloved and my friend.*

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PREFACE

This book has been a long time in the making, and has benefited from the influence of a huge number of colleagues, friends, and family. Here is an inevitably incomplete accounting of some of these debts.

I first began to think systematically about the nature, value, and pedagogy of critical thinking as an assistant professor of philosophy at Buffalo State College and it would be difficult to overstate the influence of my colleague George Hole on my thinking. He is one of the most gifted philosophy teachers I have ever known and I learned a good deal from him on how to teach philosophy. But even more than this, I am indebted to him for the way he so easily mixes philosophy, wit, and good humor in equal parts. I learned more from him than from anyone about how to teach critical thinking, and about the central role it ought to play in education and in a full life. I also owe a great deal to Gerry Nosich, whose work on critical thinking is without equal. Gerry joined us at Buffalo State College as we were designing and implementing a required first-year critical thinking course, and his gentle and wise advice proved invaluable. While with SUNY, I worked on a statewide committee to design a rubric for the assessment of critical thinking. I learned a lot in this time about the importance of teaching critical thinking across the curriculum, and I am especially indebted to Shir Filler.

Since beginning the writing of this book, I have learned a good deal from my new colleagues at Ryerson University, where the philosophy department teaches several sections of a critical thinking course that is

required by students in several programs. I owe special debts to Andrew Hunter, Klaas Kraay, David Ciavatta, Jim Dianda, and Paul Raymont.

I am indebted to Steve Quigley, my editor at Wiley, for gently persuading me to write the book, to Jackie Palmieri, an editorial assistant at Wiley, for gently persuading me to complete it on time, and to several anonymous referees who provided useful feedback on my initial proposal.

I am enormously indebted to my family. I learned as much about how to think critically from my parents as from anyone. They showed me that critical thinking begins at home, and that is a lesson that Miranda and Emily, my wonderful daughters, now champion with exhausting ingenuity.

My greatest and deepest debts, however, are to Jane, whose love and support has never been conditional on sufficient and acceptable reasons. Or on anything else.

NOTE TO INSTRUCTORS

Teaching students to think critically is more about imparting a set of skills and habits than about teaching bits of theory. In developing this textbook, I tried to incorporate several features that I thought would make teaching critical thinking both easier and more effective.

Most significantly, I steered clear of any formal notation aside from the very simplest. It is not that I doubt the value of learning formal logic. In fact, I think that many students not only can benefit from it but can also thrive by studying it. But in my experience there is so much that most students need to learn before they can see the value of mastering a formal system, and so much more benefit they can derive from a non-formal approach to critical thinking. Instead, I tried to think of the text as like an introduction to practical epistemology: offering systematic advice, and lots of practice, on the best way to go about deciding what to believe and what to do.

It is worth noting here that I treat what is sometimes called enumerative induction as a form of reasoning by analogy. It seems to me that using samples to draw a conclusion about an entire group or population just is reasoning by analogy, and that it can be usefully taught as such. I also say, and this perhaps is more controversial, that reasoning by analogy can be valid. Of course, I do not mean that it is formally valid in the way that *modus ponens* is formally valid. Reasoning is valid when it is not possible for the premises to be true and the conclusion to be false. The fact that some reasoning can be known to be valid just from its form alone is, of course, important, and I discuss some of these forms

in chapters 5 and 6. But it is important to keep in mind that not all valid arguments are formally valid (e.g., The table is blue, therefore it is colored), and not all arguments that are formally invalid are really invalid (e.g., If Jones is a male, then he is a bachelor; Jones is a bachelor; so, Jones is a male.) Judgment is always needed, it seems to me, in assessing the strength of a piece of reasoning, and this judgment is better taught by focusing on the idea of validity itself. I also think that what I say in Chapter 6 makes a reasonable and pedagogically responsible case for my view that reasoning by analogy can be valid.

I had originally planned to dedicate a chapter to thinking critically about what to do. But I worried that much of it would simply repeat points that had been made earlier and, in so doing, would make deciding what to do seem like a lesser cousin to deciding what to believe. As I worked (and then re-worked) the first six chapters, it seemed to me that I could elegantly discuss deciding what to do as we went along, when the topic at hand seemed relevant. I have thus included several “boxes” discussing various aspects of deciding what to do.

The book includes several other kinds of boxes as well. Some identify important mistakes that a good critical thinker ought to avoid. Some provide summaries of the discussion in the body of the text. Some offer examples of critical thinking across the curriculum. Some offer practical tips and rules of thumb. All are intended to make the text more readable and the concepts and skills more accessible.

I also decided that rather than dedicate a chapter to informal fallacies I would discuss them in what struck me as their proper context. It seems to me that there is no easy way to organize the different kinds of mistakes into a small number of categories without distorting their differences or exaggerating their similarities. Some of the mistakes have to do with clarifying meaning; others with ascribing views to others; some with assessing evidence; others with assessing validity. Several mistakes can occur at several otherwise quite distinct stages in deciding what to do or to believe. Rather than try to force the various mistakes into artificial categories, it seemed to me better to discuss them as we went along. For easy reference, though, I have collected them all in an appendix at the end of the book.

Careful training and repeated practice are crucial to learning any skill, and critical thinking is no exception. I have tried to include a large and varied collection of exercises. But I strongly encourage you to bring your own exercises to class and to encourage your students to seek out arguments and reasoning to share during the class time. In my experience, students learn far more when they are required during class time to participate in the construction, analysis, and assessment of

examples of reasoning about what to do or believe. I have included, at the end of most of the chapters, exercises that are specially designed to help students transfer the concepts and skills they are learning to other corners of their lives. My thought is simply that there is little point in teaching someone to think critically if they see no place for it at home, in their own discipline, or at work. Over the years I have experimented with all of these exercises, making adjustments as I went along. The exercises are in a form that I find to be both effective and not overly intrusive. But I encourage you to adjust, alter, add, subtract, and modify as you see fit. The important thing is to find ways to help students see that they are learning skills and concepts that have application and value after the final exam.

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1

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 the 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; however, 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 of 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."¹

¹Ennis, R. H. "A Taxonomy of Critical Thinking Skills and Dispositions," in *Teaching Thinking Skills: Theory and Practice*, ed. Joan Boyloff Baron and Robert J. Sternberg (New York: Freeman, 1987), pp. 9--26.

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 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 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 goals 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 towards 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 boyfriend 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, 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.

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 obeying these standards 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 not plenty of room in critical thinking for 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 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 about what these methods and standards are.

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 preferably good ones, for making the decisions we do. 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 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 preferably 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.

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 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'll 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 1.1

1. Short-answer questions:
 - a. In what sense is critical thinking reflective?
 - b. What makes critical thinking reasonable thinking?
 - c. Why is 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.
2. 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
3. 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.
4. Now that you know what critical thinking is, list five reasons why it is good to think critically.
5. 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 and we can now explore why it matters. As I said at the outset, 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 discuss knowledge in this section, and autonomy in the next.

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 1.2

We can start with an exercise. Make a chart with three columns. In the first column, list things that we, either individually or as humans in general, know for a fact. 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. These can be particular facts or kinds of things. 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 it 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's start with truth.

1.2.1 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 Barack Obama is the 44th President of the U.S., that a virus causes the flu, and that the Earth orbits the Sun. And we know what things we should leave off that list: it is not true that fish are birds, it is not true that $2 + 2 = 27$, and it is not true that George Washington

was 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. 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 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 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.**

1.2.1.1 Realism, Relativism, and Nihilism A **realist** about some subject matter is one who thinks (i) that there are truths in that area and (ii) that what those truths are is independent of what anybody thinks they are. In saying that those truths are independent of what anybody thinks that they are, I mean that they would be true even if nobody knew or even believed that they were true. The truth, as it were, is simply “out there.” Because she thinks that truth is independent of our beliefs, a realist 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 the facts are beyond our understanding, that no matter how hard we tried or for how long, we simply cannot come to know those facts. Of course, being a realist does not mean that one has 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.

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 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