

INTRODUCTION

The mind is its own place and in itself can make a hell of heaven or a heaven of hell.

John Milton, *Paradise Lost*

There are many ways to articulate the concept of critical thinking, just as there are many ways to articulate the meaning of any rich and substantive concept. But, as with any concept, there is an *essence* to critical thinking that cannot be ignored. In this introduction we introduce the essence of critical thinking. We begin to unfold its complexities. We begin to show you its relevance to your life. Then we will ask you to articulate your understanding of critical thinking, to demonstrate that you are beginning to make it your own.

A START-UP DEFINITION OF CRITICAL THINKING

Let us consider a “start-up” definition of critical thinking:

Critical thinking is the art of thinking about thinking while thinking in order to make thinking better. It involves three interwoven phases: It analyzes thinking;¹ it evaluates thinking;² it improves thinking.³

To think critically, you must be willing to examine your thinking and put it to some stern tests. You must be willing to take your thinking apart (to see it as something

¹By focusing on the parts of thinking in any situation—its purpose, question, information, inferences, assumptions, concepts, implications, and point of view.

²By figuring out its strengths and weaknesses: the extent to which it is clear, accurate, precise, relevant, deep, broad, logical, significant, and fair.

³By building on its strengths while reducing its weaknesses.

constructed out of parts). You must be willing to identify weaknesses in your thinking (while recognizing whatever strengths it may have). And, finally, you must be willing to reconstruct your thinking creatively to make it better (overcoming the natural tendency of the mind to be rigid, to want to validate one's current thoughts rather than improving them).

The best thinkers pay close attention to thinking. They analyze it. They evaluate it. They improve it.

To think critically, you develop high standards for your thinking. You learn how to step back from it and make it meet those standards. This book will help you see how to act upon your thinking in this important and disciplined way, how to drag your thinking out into the light of day, take it apart, see it for what it is, and make it better.

HOW SKILLED ARE YOU AS A THINKER?

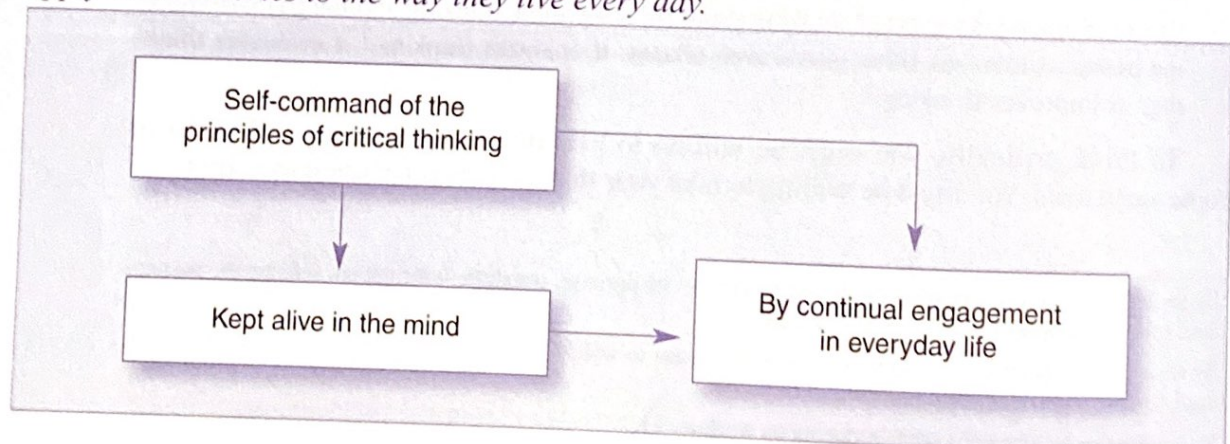
The best thinkers use their ability to think well in every dimension of their lives.

There is nothing more practical than sound thinking. No matter what your circumstance or goals, no matter where you are or what problems you face, you are better off if you are in control of your thinking. As a student, shopper, employee, citizen, lover, friend, parent—in every realm and situation of your life—good thinking pays off. Poor thinking, in contrast, inevitably causes problems, wastes time and energy, and engenders frustration and pain.

Critical thinking is the disciplined art of ensuring that you use the best thinking you are capable of in any set of circumstances. The general goal of thinking is to figure out some situation, solve some problem, answer some question, or resolve some issue. We must all make sense of the world in which we live. How well or poorly we do this is crucial to our well-being.

Whatever sense we make of things, we have multiple choices to make. We need the best information to make the best choices. We need to figure out: What is really going on in this or that situation? Does so-and-so really care about me? Am I deceiving myself when I believe that. . . ? What are the likely consequences of failing

EXHIBIT 1.1 *Critical thinkers use theories to explain how the mind works. Then they apply those theories to the way they live every day.*



to . . . ? If I want to do . . . , what is the best way to prepare? How can I be more successful in doing . . . ? Is this my biggest problem, or do I need to focus my attention on that? Successfully responding to questions such as these is the daily work of thinking.

Nothing you can do will guarantee that you will find the complete truth about anything, but there is a way to get better at it. Excellence of thought and skill in thinking are real possibilities. To maximize the quality of your thinking, however, you must learn how to become an effective critic of your thinking. And to become an effective critic of your thinking, you have to make *learning about thinking* a priority.

Consider for a minute all of what you have learned in your life: about sports, money, friendship, anger and fear, love and hate, your mother and father, nature, the city you live in, manners and taboos, human nature and human behavior. Learning is a natural and inevitable process. We learn in many directions. One direction in which learning is *not* natural is inward learning—self-knowledge, knowledge of the workings of our own mind, of how and why we think as we do.

Begin by answering these—rather unusual—questions: What have you learned about how you think? Did you ever *study* your thinking? What information do you have, for example, about the intellectual processes involved in how your mind thinks? More to the point, perhaps, what do you really know about how to analyze, evaluate, or reconstruct your thinking? Where does your thinking come from? How much of it is of high quality? How much of it is of poor quality? How much of your thinking is vague, muddled, inconsistent, inaccurate, illogical, or superficial? Are you, in any real sense, in control of your thinking? Do you know how to test it? Do you have any conscious standards for determining when you are thinking well and when you are thinking poorly? Have you ever discovered a significant problem in your thinking and then changed it by a conscious act of will? If someone asked you to teach him or her what you have learned about thinking thus far in your life, would you have any idea what that was or how you learned it?

The best thinkers make the study of thinking second nature.

If you are like most people, the honest answers to these questions run along the lines of: "Well, I suppose I don't know much about my thinking or about thinking in general. I suppose in my life I have more or less taken my thinking for granted. I don't really know how it works. I have never studied it. I don't know how I test it, or even if I *do* test it. It just happens in my mind automatically."

Serious study of thinking, serious thinking about thinking, is rare in human life. It is not a subject in most schools. It is not a subject taught at home. But if you focus your attention for a moment on the role that thinking is playing in your life, you may come to recognize that everything you do or want or feel is influenced by your thinking. And if you become persuaded of that, you will be surprised that humans show so little interest in thinking. What is more, if you start to pay attention to thinking in a manner analogous to the way a botanist observes plants, you will be on your way to becoming a truly exceptional person. You will begin to notice what few others notice. You will be the rare person who is engaged in discovering what human thinking is about. You will be the rare person who knows how and why he or she is thinking, the rare person skilled in assessing and improving how he or she thinks.

Some things you will eventually discover are: All of us, somewhere along the way, have picked up bad habits of thinking. All of us, for example, make generalizations when we don't have the evidence to back them up, allow stereotypes to influence our thinking, form some false beliefs, tend to look at the world from one fixed point of view, ignore or attack points of view that conflict with our own, fabricate illusions and myths that we subconsciously confuse with what is true and real, and think deceptively about many aspects of our experience. As you discover these problems in your thinking, we hope you will begin to ask yourself some key questions: Is it possible for me to learn to avoid bad habits of thought? Is it possible for me to develop good habits of thought? Is it possible for me to think at a high, or at least *higher*, level?

These are problems and questions that few discover or ask. Nevertheless, every major insight you gain into good or bad thinking can enhance your life significantly. You can begin to make better decisions. You can gain power, important power that you presently lack. You can open up new doors for yourself, see new options, minimize significant mistakes, maximize potential understandings. If you're going to live your life as a thinker, why not get good at thinking about thinking?

I.1 *Think for Yourself*

BEGINNING TO THINK ABOUT YOUR THINKING

See if you can identify any discovery you made about your thinking before you started to read this book. If you can't think of any, write out your best explanation as to why not. If you do think of something, explain what you learned about your thinking.

GOOD THINKING REQUIRES HARD WORK

There is a catch—there almost always is. To make significant gains in the quality of your thinking, you will have to engage in a kind of work that most humans find unpleasant, if not painful: intellectual work. This is the price you have to pay if you want the gain. One doesn't become a skillful critic of thinking overnight any more than one becomes a skillful basketball player or dancer overnight. To become a student of thinking, you must be willing to put the work into thinking that skilled improvement requires. When thinking of what physical conditioning requires, we say, "No pain, no gain!" In this case, it would be more precise to say, "No intellectual pain, no *intellectual* gain!"

This means you must be willing to practice special "acts" of thinking that are, initially at least uncomfortable, and sometimes challenging and difficult. You have to learn to do "moves" with your mind analogous to what accomplished athletes learn to do through practice and feedback with their body. Improvement in thinking, then, is similar to improvement in other domains of performance in which progress is a product of sound theory, commitment, hard work, and practice. Although this book

will point the way to what you need to practice to become a skilled thinker, it cannot provide you with the internal motivation to do the required work. This must come from you. You must be willing, as it were, to be the monkey who comes down from the trees and starts to observe your fellow monkeys in action. You must be willing to examine mental films of your own monkeying around, as well.

Let's now develop further the analogy between physical and intellectual development. This analogy, we believe, goes a long way, and provides us with just the right prototype to keep before our minds. If you play tennis and you want to play better, there is nothing more advantageous than to look at some films of excellent players in action and then painstakingly compare how they, in comparison to you, address the ball. You study their performance. You note what you need to do more of, what you need to do less of, and you practice, practice, practice. You go through many cycles of practice/feedback/practice. Your practice heightens your awareness of the ins and outs of the art. You develop a vocabulary for talking about your performance. Perhaps you get a coach. And slowly, progressively, you improve. Similar points could be made for ballet, distance running, piano playing, chess playing, reading, writing, parenting, teaching, studying, and so on.

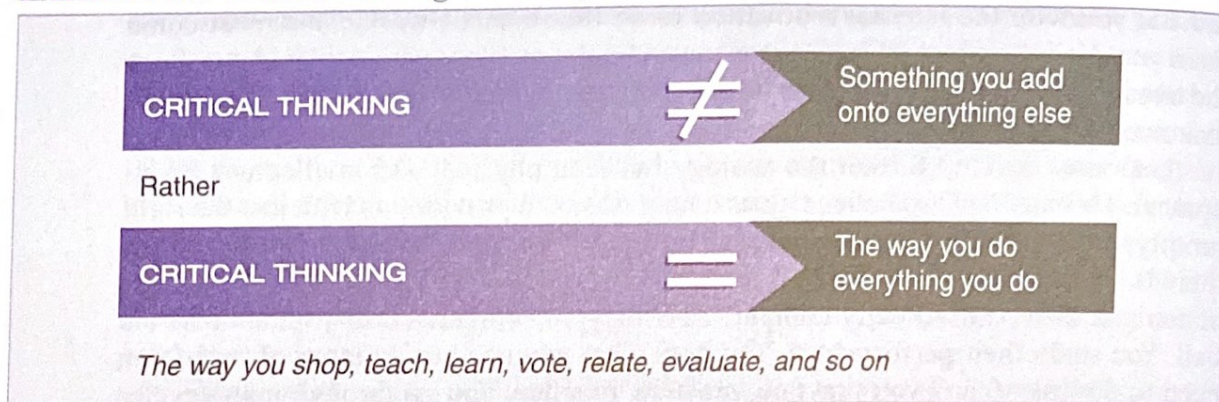
One major problem, however, is that all the activities of skill development with which we are typically familiar are visible. We could watch a film of the skill in action. But imagine a film of a person sitting in a chair *thinking*. It would look like the person was doing nothing. Yet, increasingly, workers are being paid precisely for the thinking they are able to do, not for their physical strength or physical activity. Therefore, though most of our thinking is invisible, it represents one of the most important things about us. Its quality, in all likelihood, will determine whether we will become rich or poor, powerful or weak. Yet we typically think without explicitly noticing how we are doing it. We take our thinking for granted.

For example, important concepts, such as love, friendship, integrity, freedom, democracy, and ethics, are often unconsciously twisted and distorted in common life and thought. Our subconscious interest is often in getting what we want, not in describing ourselves or the world truly and honestly.

In any case, most of our concepts are invisible to us, though implicit in our talk and behavior. So is much of our thinking. We would be amazed, and sometimes shocked, if we were to see all of our thinking displayed for us on a large screen.

To develop as a thinker, you must begin to think of your thinking as involving an implicit set of structures—concepts being one important set—whose use can be improved only when you begin to take the tools of thinking seriously. You develop as a thinker when you explicitly notice what your thinking is doing and when you become committed to recognizing both strengths and weaknesses in that thinking. You develop as a thinker as you build your own “large screen” on which to view your thinking.

Critical thinking, then, provides the tools of mind you need to think through anything and everything that requires thought—in college and in life. As your intellectual skills develop, you gain instruments that you can use deliberately and mindfully to better reason through the thinking tasks implicit in your short- and long-range goals. There are better and worse ways to pursue whatever you are after. Good thinking enables you to maximize the better ways and minimize the worse.

EXHIBIT I.2 *Critical thinking is the way we should approach everything we do.***I.2** *Think for Yourself***UNDERSTANDING THE IMPORTANCE OF CONCEPTS**

See if you can think of a time in which you “misused” an important concept. Hint: Think of an idea that you commonly use in your thinking, such as friendship, trust, truthfulness, or respect. Have you ever implied you were someone’s friend but acted against that person (such as gossiping behind that person’s back)? Write out or orally explain your answer.

Only by applying the fundamentals to a wide range of human problems can one begin to appreciate their power and usefulness. Think of it this way. If we were coaching you in tennis, we would remind you again and again to keep your eye on the ball. Could you imagine saying to your coach, “Why do I have to keep my eye on the ball? I already did that once.” The same logic applies to the principles of skilled thinking. If you want to be proficient, you have to redirect your eyes to the fundamentals, again and again and again.

EXHIBIT I.3 *Why is critical thinking so important? (A more elaborated “definition.”)***The Problem:**

Everyone thinks. It is our nature to do so. But much of our thinking, left to itself, is biased, distorted, partial, uninformed, or downright prejudiced. Yet the quality of our life and that of what we produce, make, or build depends precisely on the quality of our thought. Shoddy thinking is costly, both in money and in quality of life. Excellence in thought, however, must be systematically cultivated.

DEFINING CRITICAL THINKING

Critical thinking is that mode of thinking—about any subject, content, or problem—in which the thinker improves the quality of his or her thinking by skillfully analyzing, assessing, and reconstructing it. Critical thinking is self-directed, self-disciplined, self-monitored, and self-corrective thinking. It presupposes assent to rigorous standards of excellence and mindful command of their use. It entails effective communication and problem-solving abilities, as well as a commitment to overcome one's native egocentrism and sociocentrism.

To analyze thinking:

Identify its
purpose
question
information
conclusion(s)
assumptions
implications
main concept(s)
point of view

To assess thinking:

Check it for
clarity
accuracy
precision
relevance
depth
breadth
significance
logic
and fairness

The Result

A well-cultivated critical thinker:

- raises vital questions and problems, formulating them clearly and precisely
- gathers and assesses relevant information, using abstract ideas to interpret it effectively

- comes to well-reasoned conclusions and solutions, testing them against relevant criteria and standards
- thinks open-mindedly within alternative systems of thought, recognizing and assessing, as need be, their assumptions, implications, and practical consequences
- communicates effectively with others in figuring out solutions to complex problems.

I.3 *Think for Yourself*

BEGINNING TO CONSIDER PROBLEMS IN THINKING

Exhibit 1.3 shows that a big part of “the problem” critical thinking addresses is that “much of our thinking, left to itself, is biased, distorted, partial, uninformed, or downright prejudiced.” Make a list of five significant problems in human life. Then see if you can identify the problems in *thinking* that lead to those problems. Be as specific as possible.

THE CONCEPT OF CRITICAL THINKING

The concept of critical thinking reflects an idea derived from roots in ancient Greek. The word *critical* derives etymologically from two Greek roots: *kritikos* (meaning “discerning judgment”) and *kriterion* (meaning “standards”). Etymologically, then, the word implies the development of “discerning judgment based on standards.” In *Webster’s New World Dictionary*, the relevant entry for *critical* reads: “characterized by careful analysis and judgment” and is followed by: “Critical, in its strictest sense, implies an attempt at objective judgment so as to determine both merits and faults.” Considering these definitions together, then, critical thinking may be appropriately defined as

thinking explicitly aimed at well-founded judgment, utilizing appropriate evaluative standards in an attempt to determine the true worth, merit, or value of something.

Critical thinking, then, has three dimensions: an analytic, an evaluative, and a creative component. As critical thinkers, we analyze thinking in order to evaluate it. We evaluate it in order to improve it.

In other words, critical thinking is the *systematic monitoring of thought with the end of improvement*. When we think critically, we realize that thinking must not be accepted at face value but must be analyzed and assessed for its *clarity, accuracy, relevance, depth, breadth, and logic*. We recognize that all reasoning occurs within *points of view* and frames of reference, that all reasoning proceeds from some *goals and objectives* and has an *informational base*, that all data when used in reasoning must be *interpreted*, that interpretation involves *concepts*, that concepts entail *assumptions*, and

that all basic inferences in thought have *implications*. Because problems in thinking can occur in any of these dimensions, each dimension must be monitored.

When we think critically, we realize that in every domain of human thought, it is possible and important to question the parts of thinking and the standards for thought. Routine questioning in the critical mind looks something like this:

Let's see, what is the most fundamental issue here? From what point of view should I approach this problem? Does it make sense for me to assume this? What may I reasonably infer from these data? What is implied in this graph? What is the fundamental concept here? Is this information consistent with that information? What makes this question complex? How could I check the accuracy of these data? If this is so, what else is implied? Is this a credible source of information? And so forth.

With intellectual language such as this in the foreground, one can come to recognize fundamental critical thinking "moves" that can be used in reasoning through any problem or issue, class or subject. To help you learn the language of critical thinking and to apply it on a regular basis to your learning and your life is a primary objective of this book. With the analytic and evaluative tools of critical thinking, you can learn how to raise the quality of your thinking.

I.4 Think for Yourself

BEGINNING TO THINK ABOUT YOUR THINKING

Consider your thinking in personal relationships, in dealing with friends, in relating to romantic partners, in sports, as a reader, as a writer, as a listener to lectures, as an employee, in planning your life, in dealing with your emotions, and in figuring out complex situations. Complete these statements:

1. Right now, I believe my thinking across all domains of my life is of _____ quality. I base this judgment on _____
2. In the following areas, I think very well:
 - a. _____
 - b. _____
 - c. _____
3. In the following areas, my thinking is okay, not great, but not terrible either:
 - a. _____
 - b. _____
 - c. _____
4. In the following areas, my thinking is probably poor:
 - a. _____
 - b. _____
 - c. _____

EXHIBIT I.4 *Critical thinking applies to everything about which we think.***Critical Thinking About:**

Teaching and learning	Well-being	Speaking
Creativity	Listening	Politics
Emotions	Medicine	Religion
Intuition	Writing	Problem solving
Habits	Nursing	Reading

BECOME A CRITIC OF YOUR THINKING

One of the most important things you can do for yourself is to begin the process of becoming a critic of your thinking. You do this not to negate or “dump on” yourself but, instead, to improve yourself, to begin to practice the art of skilled thinking and lifelong learning. To do this, you must discover your thinking, see its structure, observe its implications, and recognize its basis and vantage point. You must come to recognize that, through commitment and daily practice, you can make foundational changes in your thinking. You need to learn about your bad habits of thought and about what you are striving for: good habits of thought. At whatever level you think, you need to recognize that you can learn to think better. Creative improvement is the end for which critical thinkers strive.

EXHIBIT I.5 *Critical thinking adds a second level of thinking to ordinary thinking. The second level analyzes, assesses, and improves our ordinary thinking.*

Second-order thinking is first-order thinking raised to the level of conscious realization (analyzed, assessed, and reconstructed).

First-order thinking is spontaneous and nonreflective. It contains insight, prejudice, truth and error, good and bad reasoning, indiscriminately combined.

ESTABLISH NEW HABITS OF THOUGHT

Most of us get through school by modifying our thinking the hard way—through trial and error. Most of us have little help in learning how to become a critic of our thinking. We develop few tools for working on our thinking. The result is that we use our native capacities to think in a largely unconscious fashion. We develop some good habits of thought and many poor habits of thought. The productive and unproductive habits of mind become intermixed and hard to disentangle. We learn without a clear sense of the ideal in thinking. We are not clear about our goals as thinkers. We treat each class like a new set of tasks to complete mechanically. We fail to learn important ideas that enable us to learn how to learn better and better.

To learn at a deeper level, you need to get powerful leverage on learning. You need a clearer perspective on what you should be striving to achieve, and you need powerful tools for upgrading your thinking and learning.

Critical thinking works. It is practical. It will enable you to be more successful, to save time and energy, and to experience more positive and fulfilling emotions. It is in your interest to become a better critic of your own thinking: as a student, scholar, parent, consumer, and citizen, and in other roles as well. If you are not progressively improving the quality of your life, you have not yet discovered the true power of critical thinking. We hope this book will serve as an impetus for this shift. Good thinking works—for everyone.

I.5 *Think for Yourself*

CHANGING YOUR HABITS

Have you ever changed a habit as a result of your conscious effort and planning? What do you have to do to change a habit? Is it easy? If not, why not? What do you think you would have to do to change your habits of thought? Write out your answer or explain orally.

DEVELOP CONFIDENCE IN YOUR ABILITY TO REASON AND FIGURE THINGS OUT

No matter how well or poorly you have performed in school or in college, it is important to realize that the power of the human mind, *the power of your mind*, is virtually unlimited. But, if any of us are to reach our potential, we must take command of the workings of our minds. No matter where we are as thinkers, we can always improve.

As young children going through school, we usually get the impression that those students who are the quickest to answer questions, the quickest to turn in their papers, the quickest to finish tests are the “smartest” students. Those students who fall

into this category often define themselves as “smart,” and therefore as *better* than other students. They consequently often become intellectually arrogant. On the contrary, those students who struggle often see themselves as inferior, as incapable. And these students often give up on learning. They don’t see that the race is to the tortoise, not the hare.

The fact is that standard measures of intelligence often impede learning. The point is that, whatever you have learned or mislearned about what it means to learn, you can now begin in earnest to develop your own mind, to take command of it. Critical thinking provides the tools for you to do just that. And it levels the playing field for all students. Some of the best thinkers in the world—thinkers who are like Albert Einstein, Charles Darwin, and Isaac Newton—are not the quickest thinkers. They are thinkers who plod along, who ask questions, who pursue important ideas, who put things together in their minds, who figure things out for themselves, who create connections among important ideas. They are people who believe in the power of their own minds. They are people who appreciate the struggle inherent in substantive learning and thinking.

Consider how Darwin (1958) articulated his own struggles with learning:

I have as much difficulty as ever in expressing myself clearly and concisely; and this difficulty has caused me a very great loss of time, but it has had the compensating advantage of forcing me to think long and intently about every sentence, and thus I have been led to see errors in reasoning and in my own observations or those of others.

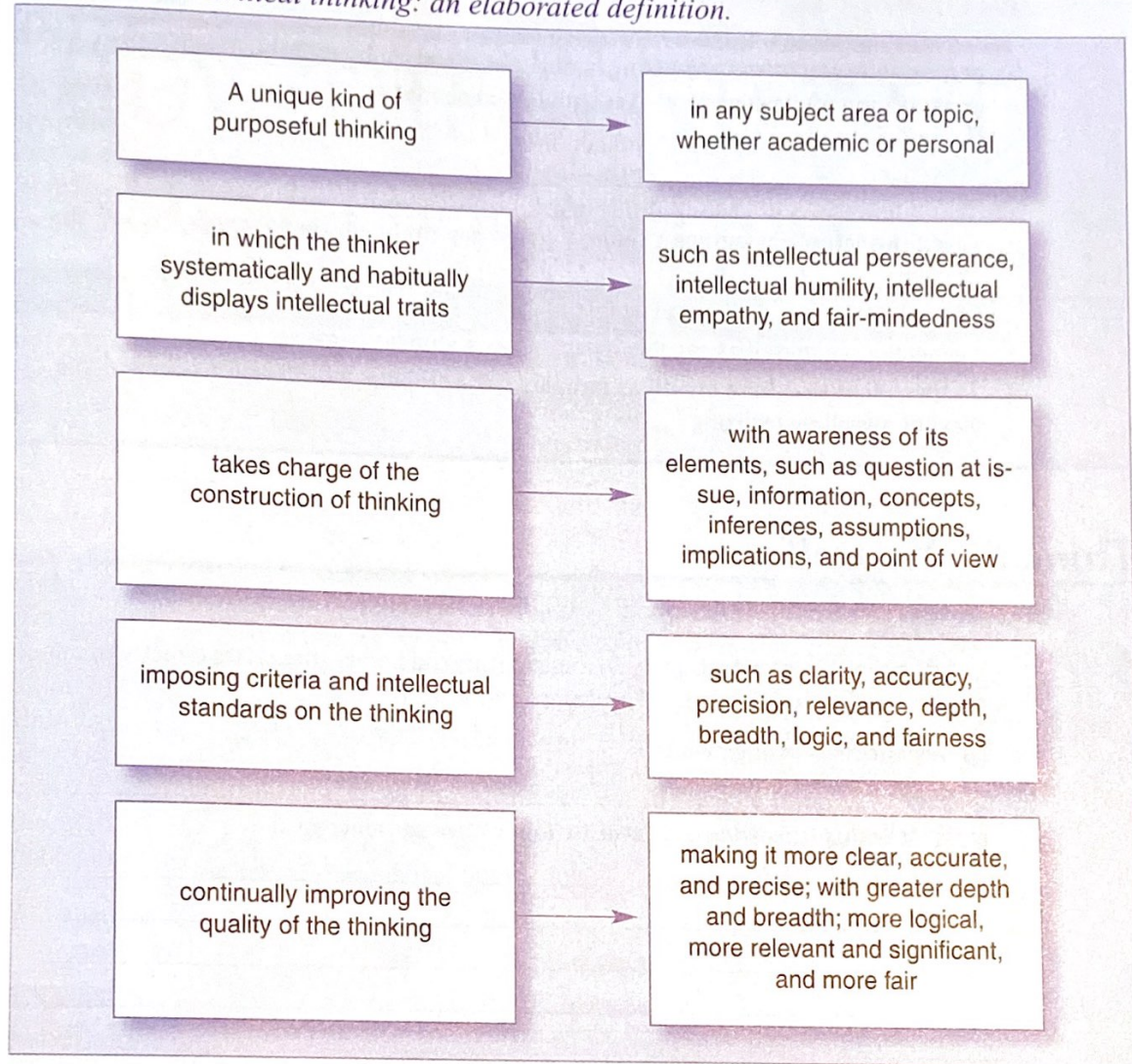
In pursuing intellectual questions, Darwin relied upon perseverance and continual reflection, rather than memory and quick reflexes.

I have no great quickness of apprehension or wit. . . . My power to follow a long and purely abstract train of thought is very limited. . . . My memory is extensive, yet hazy. . . . So poor in one sense is my memory, that I have never been able to remember for more than a few days a single date or line of poetry. . . . I have a fair share of invention, but not, I believe, in any higher degree. . . . I think that I am superior to the common run of man in noticing things which easily escape attention, and in observing them carefully. . . . I have had the patience to reflect or ponder for any number of years over any unexplained problem. (p. 55)

Einstein (Clark, 1984), for his part, performed so poorly in school that when his father asked his son’s headmaster what profession his son should adopt, the answer was simply, “It doesn’t matter; he’ll never make a success of anything.” He showed no signs of being a genius, and as an adult denied that his mind was extraordinary: “I have no particular talent. I am merely extremely inquisitive” (p. 27).

The best thinkers are those who systematically and carefully reason their way through problems. They ask questions when they don’t understand. They don’t allow other people to define their level of intelligence. They don’t allow intelligence tests or other standardized tests to define their level of intelligence. They realize that, no matter how difficult or easy it is for them to “remember” facts for tests, the real work of learning requires perseverance and commitment. The real work of learning requires skills of mind that you can develop, if and when you decide to. Learning these skills of mind is precisely what this book is all about.

Remember, the race is to the tortoise, not the hare. Be the tortoise.

EXHIBIT 1.6 *Critical thinking: an elaborated definition.*

I.6 Think for Yourself

HOW DO YOU SEE YOURSELF AS A THINKER?

Think back to your previous school or college experience. Which pattern have you typically fallen into?

1. The quick student to whom teachers typically are drawn, because you can answer the factual questions they think are important.
2. The student who has difficulty remembering facts so that learning has been more difficult for you.

3. The student who does pretty well because, though you are not the quickest at remembering facts and answering factual questions, you still have a pretty good memory so you have performed adequately in school.
4. A different pattern entirely.

Complete these statements:

1. Given the categories outlined above, I would say that I am the following "type" of student: _____
2. I have/have not typically struggled in school/college because . . .
3. I generally see myself as capable/incapable as a student because . . .
4. To the extent that I see myself as incapable as a student, I can begin to change this view of myself by realizing . . .

I.7 *Think for Yourself*

ARTICULATE YOUR UNDERSTANDING OF CRITICAL THINKING

Read through this introduction again, highlighting the points that relate directly to the definition of critical thinking. Then complete these statements:

1. To me, critical thinking means:

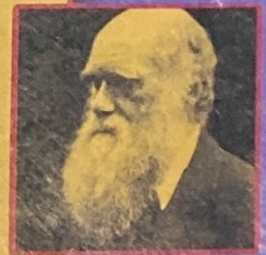
2. In other words (this should be at least four or five sentences):

3. I can apply critical thinking to my life in the following ways:

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