

WHAT DOES IT LOOK LIKE WHEN A GROUP IS ENGAGED IN CRISIS-LEVEL CRITICAL THINKING?

WHAT IS A PERSON LIKE WHO IS STRONGLY PREDISPOSED TOWARD CRITICAL THINKING?

WHAT DOES THE RESEARCH TELL US ABOUT SPECIFIC POSITIVE HABITS OF MIND?

HOW CAN I CULTIVATE THE SEVEN POSITIVE CRITICAL THINKING HABITS OF MIND?

After training

for every conceivable contingency, the unexpected happened. Initially, the challenge was simply to figure out what the problem was. If it could be correctly identified, then there might be some slim chance of survival. If not, the outcome could be tragic.

As you watch the video clip at www.TheThinkSpot.com, keep in mind that you are seeing a dramatic reenactment. The actors, music, camera angles, staging, props, and lighting all contribute to our overall experience. That said, this portrayal of



individual and group problem solving is highly consistent with the research on human cognition and decision making.¹ The clip dramatizes a group of people engaged in thinking critically together about one thing: *What could the problem be?* Their approach is to apply their reasoning skills to the best of their ability. But, more than only their thinking skills, their mental habits of being analytical, focused, and systematic enabled them to apply those skills well during the moment of crisis. I suggest that you watch the brief video prior to reading the summary analysis of *Apollo 13* beginning on page 28.

THE “WILLING” IN “WILLING AND ABLE” TO THINK CRITICALLY

A Group Engaged in Crisis-Level Critical Thinking

The *Apollo 13* sequence opens with the staff at Mission Control in Houston and the three-person crew of Apollo 13 well into the boredom of routine housekeeping. Suddenly, the crew of Apollo 13 hears a loud banging noise and their small, fragile craft starts gyrating wildly. The startled look on Tom Hanks's face in the video re-enactment is priceless. A full 15 seconds elapses before he speaks. During that time his critical thinking is in overdrive. He is trying to interpret what has just happened. His mind has to make sense of the entirely unexpected and unfamiliar experience. He neither dismisses nor ignores the new information that presents itself. His attention moves between checking the craft's instrument panel and attending to the sounds and motions of the spacecraft itself. He focuses his mind, forms a cautious but accurate interpretation, and with the disciplined self-control we expect of a well-trained professional, he says, "Houston, we have a problem."

At first they call out information from their desk monitors and from the spacecraft's instrument displays. They crave information from all sources.

They know they must share what they are learning with each other as quickly as they can in the hope that someone will be able to make sense out of things. They do not yet know which piece of information may be the clue to their life-or-death problem, but they have the discipline of mind to want to know everything that might be relevant. And they have the confidence in their collective critical thinking skills to believe that this approach offers their best hope to identify the true problem.

One member of the ground crew calls out, "O₂ Tank Two not reading." That was the vital bit of information, which had washed by in the torrents of data. Soon a number of people begin proposing explanations: "They may have been hit by a meteor." "Their antenna is broken." "This can't be happening, it must be instrumentation."

The vital critical thinking skill of Self-Regulation is personified in the movie by the character played by Ed Harris. His job is to monitor everything that is going on and to correct the process if he judges that it is getting off track. For example, he says, "These guys are talking about bangs and shimmies up there. Don't sound like instrumentation to me." His argument is brief, powerful, and effective. The reason—"These guys are talking about bangs and shimmies up there"—is based on what he has

Critical Thinking Disposition Self-Rating Form

Answer yes or no to each. Can I **name any specific instances over the past two days** when I:

1 ____ was courageous enough to ask tough questions about some of my longest held and most cherished beliefs?

2 ____ backed away from questions that might undercut some of my longest held and most cherished beliefs?

3 ____ showed tolerance toward the beliefs, ideas, or opinions of someone with whom I disagreed?

4 ____ tried to find information to build up my side of an argument but not the other side?

5 ____ tried to think ahead and anticipate the consequences of various options?

6 ____ laughed at what other people said and made fun of their beliefs, values, opinion, or points of views?

7 ____ made a serious effort to be analytical about the foreseeable outcomes of my decisions?

8 ____ manipulated information to suit my own purposes?

9 ____ encouraged peers not to dismiss out of hand the opinions and ideas other people offered?

10 ____ acted with disregard for the possible averse consequences of my choices?

11 ____ organized for myself a thoughtfully systematic approach to a question or issue?

12 ____ jumped in and tried to solve a problem without first thinking about how to approach it?

13 ____ approached a challenging problem with confidence that I could think it through?

14 ____ instead of working through a question for myself, took the easy way out and asked someone else for the answer?

15 ____ read a report, newspaper, or book chapter or watched the world news or a documentary just to learn something new?

16 ____ put zero effort into learning something new until I saw the immediate utility in doing so?

17 ____ showed how strong I was by being willing to honestly reconsider a decision?

18 ____ showed how strong I was by refusing to change my mind?

19 ____ attended to variations in circumstances, contexts, and situations in coming to a decision?

20 ____ refused to reconsider my position on an issue in light of differences in context, situations, or circumstances?

If you have described yourself honestly, this self-rating form can offer a rough estimate of what you think your overall disposition toward critical thinking has been in the past two days.

Give yourself 5 points for every "Yes" on odd numbered items and for every "No" on even numbered items. If your total is 70 or above, you are rating your disposition toward critical thinking over the past two days as generally positive. Scores of 50 or lower indicate a self-rating that is averse or hostile toward critical thinking over the past two days. Scores between 50 and 70 show that you would rate yourself as displaying an ambivalent or mixed overall disposition toward critical thinking over the past two days.

Interpret results on this tool cautiously. At best this tool offers only a rough approximation with regard to a brief moment in time. Other tools are more refined, such as the *California Critical Thinking Disposition Inventory*, which gives results for each of the seven critical thinking habits of mind.

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heard monitoring the radio conversation. The conclusion he draws from that information has the effect of directing everyone's energy and attention toward one set of possibilities, those that would be "real problems" rather than toward another set of possibilities. Had he agreed that the problem was instrumentation, then everyone's efforts would have been directed toward checking and verifying that the gauges and computers were functioning properly.

There is a very important lesson for good critical thinking in what we see Ed Harris doing. Judging correctly what kind of problem we are facing is essential. If we are mistaken about what the problem is, we are likely to consume time, energy, and resources exploring the wrong kinds of solutions. By the time we figure out that we took the wrong road, the situation could have become much worse than when we started. The Apollo 13 situation is a perfect example. In real life, had the people at Houston Control classified the problem as instrumentation, they would have used up what little oxygen there was left aboard the spacecraft while the ground crew spent time validating their instrument readouts.

Back on the spacecraft, Tom Hanks, who personifies the critical thinking skills of interpretation and inference, is struggling to regain navigational control. He articulates the inference, "If we'd been hit by a meteor, we'd be dead by now." A few moments later he glances out the craft's side window. Something in the rearview mirror catches his attention. Again, his inquisitive mind will not ignore what he's seeing. A few seconds pass as he tries to interpret what it might be. He offers his first observation, "We are venting something into space." The mental focus and stress of the entire Houston ground crew are etched on their faces. Their expressions reveal the question in their minds: What could he possibly be seeing? Seconds pass with agonizing slowness. Using his interpretive skills, Tom Hanks categorizes with caution and then, adding greater precision, he infers, "It is a gas of some kind . . . It must be the oxygen." Kevin Bacon looks immediately to the oxygen tank gauge on the instrument panel for information that might confirm or disconfirm whether it really is the oxygen. It is.

Being by habit inclined to anticipate consequences, everyone silently contemplates the potential tragedy implied by the loss of oxygen. As truth-seekers, they must accept the finding. They cannot fathom denying it or hiding from it. Their somber acknowledgment comes in the response, "Roger, we copy you're venting."

OK, now we have the truth. What are we going to do about it? The characters depicted in this movie are driven by a powerful orientation toward using critical thinking to resolve whatever problems they encounter. The room erupts with noise as each person refocuses on their little piece of the problem. People are moving quickly, talking fast, pulling headset wires out of sockets in their haste. The chaos and cacophony in the room reveal that the group is not yet taking a systematic, organized approach. Monitoring this, Ed Harris interjects another self-correction into the group's critical thinking. He may not yet know how this problem of the oxygen supply is going to be solved or even whether this problem can be solved, but he is going to be sure that the ground crew addresses it with all the skill and all the mental power it can muster. "Wake up anybody you need. Let's get them in here. Let's work the problem, people."

As depicted in this excerpt, the combined ground crew and spacecraft crew, as a group, displayed a top score on "Holistic Critical Thinking Scoring Rubric." The emotions and stresses of the situation are unmistakable. The group's powerfully strong critical thinking habits of mind enable the group to use that energy productively. It gives urgency to the efforts. Thus, the message about our thinking processes that emerges is that emotion need not be the antithesis to reason; emotion can be the impetus to reason.

If we were compelled to make a choice between these personal attributes and knowledge about the principles of logical reasoning together with some degree of technical skill in manipulating special logical processes, we should decide for the former.

John Dewey, *How We Think*^v

The Spirit of a Strong Critical Thinker

The video clip was well staged. Skillful actors displayed the behaviors and responses of strong critical thinkers engaged in problem solving at a moment of crisis. Authors of screenplays and novels often endow their protagonists with strongly positive critical thinking skills and dispositions. The brilliantly insightful Sherlock Holmes or the lead character on CBS series *The Mentalist*, Patrick Jane, played by Simon Baker, comes to mind as examples. A key difference, however, is that fictional detectives always solve the mystery, while, as we all know, in the real world there is no guarantee. Critical thinking is about *how* we approach problems, decisions, questions, and issues even if ultimate success eludes us. Being disposed to engage our skills as best we can is the "willing" part of "willing and able" to think. We looked at the "able" part in Chapter 2. Here we examine the "willing" part, beginning with taking a closer look at the overall disposition toward critical thinking.

POSITIVE AND NEGATIVE HABITS OF MIND

A person with a strong *disposition* toward critical thinking has the *consistent internal motivation* to engage problems and make decisions by using critical thinking.⁴ Operationally this means three things: The person consistently *values* critical thinking, *believes* that using critical thinking skills offers the greatest promise for reaching good judgments, and *intends* to approach problems and decisions by applying critical thinking skills as best as he or she can. This combination of values, beliefs, and intentions forms the habits of mind that dispose the person toward critical thinking.⁴

Someone strongly disposed toward critical thinking would probably agree with the following statements:

- "I hate talk shows where people shout their opinions but never give any reasons at all."
- "Figuring out what people really mean by what they say is important to me."
- "I always do better in jobs where I'm expected to think things out for myself."
- "I hold off making decisions until I have thought through my options."
- "Rather than relying on someone else's notes, I prefer to read the material myself."
- "I try to see the merit in another's opinion, even if I reject it later."

- “Even if a problem is tougher than I expected, I will keep working on it.”
- “Making intelligent decisions is more important than winning arguments.”

Persons who display a strong positive disposition toward critical thinking are described in the literature as “having a critical spirit,” or as people who are “mindful,” “reflective,” and “meta-cognitive.” These expressions give a person credit for consistently applying their critical thinking skills to whatever problem, question, or issue is at hand. People with a critical spirit tend to ask good questions, probe deeply for the truth, inquire fully into matters, and strive to anticipate the consequences of various options. In real life our skills may or may not be strong enough, our knowledge may or may not be adequate to the task at hand. The problem may or may not be too difficult for us. Forces beyond our control might or might not determine the actual outcome. None of that cancels out the positive critical thinking habits of mind with which strong critical thinkers strive to approach the problems life sends their way.

A person with weak critical thinking dispositions might disagree with the previous statements and be more likely to agree with these:

- “I prefer jobs where the supervisor says exactly what to do and exactly how to do it.”
- “No matter how complex the problem, you can bet there will be a simple solution.”
- “I don’t waste time looking things up.”
- “I hate when teachers discuss problems instead of just giving the answers.”
- “If my belief is truly sincere, evidence to the contrary is irrelevant.”
- “Selling an idea is like selling cars; you say whatever works.”
- “Why go to the library when you can use made-up quotes and phony references?”
- “I take a lot on faith because questioning the fundamentals frightens me.”
- “There is no point in trying to understand what terrorists are thinking.”

When it comes to approaching specific questions, issues, or problems, people with a weak or negative critical thinking disposition are apt to be muddle-headed, disorganized, overly simplistic, spotty about getting relevant information, likely to apply unreasonable criteria, easily distracted, ready to give up at the least hint of difficulty, intent on a solution that is more detailed than is possible, or too readily satisfied with some uselessly vague response.

PRELIMINARY SELF-ASSESSMENT

It is only natural to wonder about our own disposition. The “Critical Thinking Disposition Self-Rating Form” on page 28 offers us a way of reflecting on our own values, beliefs, and intentions about the use of critical thinking. As noted on the form itself, “This tool offers only a rough approximation with regard to a brief moment in time.” Before reading further in the chapter about the disposition toward critical thinking, I invite you to take a moment and complete the self-assessment. Keep in mind as you interpret the results that this measure does not assess critical thinking skills. Rather, this tool permits one to reflect to himself or herself whether, over the past two days, the disposition manifested in behavior was positive, ambivalent, or averse toward engaging in thoughtful, reflective, and fair-minded judgments about what to believe or what to do.

Research on the Disposition toward Critical Thinking

The broad understanding of being disposed toward using critical thinking or away from using critical thinking has been the object of empirical research in the cognitive sciences since the early 1990s. The purpose of this research has been to give greater precision to the analysis and measurement of the dispositional dimension of critical thinking.

SEVEN POSITIVE CRITICAL THINKING HABITS OF MIND

One research approach involved asking thousands of people to indicate the extent to which they agreed or disagreed with a long list of statements not unlike those in the two short lists on pages 29–30. Using factor-analytic statistical methods, these researchers identified seven measurable aspects within the overall disposition toward critical thinking. We can think of these as the seven positive critical thinking habits of mind. Using this research, we can describe someone who has all seven positive critical thinking habits of mind as a person who is:

- **Truth-seeking** – meaning that the person has intellectual integrity and a courageous desire to actively strive for the best possible knowledge in any given situation. A truth-seeker asks probing questions and follows reasons and evidence wherever they lead, even if the results go against his or her cherished beliefs.
- **Open-minded** – meaning that the person is tolerant of divergent views and sensitive to the possibility of his or her own possible biases. An open-minded person respects the right of others to have different opinions.
- **Analytical** – meaning that the person is habitually alert to potential problems and vigilant in anticipating consequences and trying to foresee short-term and long-term outcomes of events, decisions, and actions.
- **Systematic** – meaning that the person consistently endeavors to take an organized and thorough approach to identifying and resolving problems. The systematic person is orderly, focused, persistent, and diligent in his or her approach to problem solving, learning, and inquiry.
- **Confident in reasoning** – meaning that the person is trustful of his or her own reasoning skills to yield good judgments. A person’s or a group’s confidence in their own critical thinking may or may not be warranted, which is another matter.
- **Inquisitive** – meaning that the person habitually strives to be well-informed, wants to know how things work, and seeks to learn new things about a wide range of topics, even if the immediate utility of knowing those things is not directly evident. The inquisitive person has a strong sense of intellectual curiosity.
- **Judicious** – meaning that the person approaches problems with a sense that some are ill-structured and some can have more than one plausible solution. The judicious person has the cognitive maturity to realize that many questions and issues are not black and white and that, at times, judgments must be made in contexts of uncertainty.

NEGATIVE HABITS OF MIND

After the measurement tools were refined and validated for use in data gathering, the results of repeated samplings showed that some people are strongly positive on one or more of the seven positive dispositional

The Disposition toward Critical Thinking



aspects. Some people are negative or ambivalent on one or more of the seven attributes.

There is a name associated with the negative end of the scale for each of the seven attributes, just as there is a name associated with the positive end of the scale. The "Critical Thinking Habits of Mind" chart on page 33 indicates the full set of names, for both positive and negative attributes. A person's individual dispositional portrait emerges from the seven, for a person may be positive, ambivalent, or negative on each.

In the film *Philadelphia*, Denzel Washington plays a personal liability litigator who is not above increasing the amount a client seeks for "pain and suffering" by hinting to the client that he may have more medical problems than the client had at first noticed. Watch the scene where a new potential client, played by Tom Hanks, visits Washington's office seeking representation. Access this clip at www.TheThinkSpot.com.

The clip from *Philadelphia* starts **the THINKSPOT** out with Denzel Washington talk-

ing to a client who wants to sue the city over a foolish accident that the man brought upon himself. The scene establishes that Washington is a hungry lawyer who will take almost any case. Tom Hanks comes into the office and says that he wants to sue his former employer, believing that he was wrongly fired from his job because he has AIDS. You would think that

Washington would jump at this opportunity. There is a lot of money to be made if he can win the case. Truth-seeking demands that the real reason for the firing be brought to light. But at this point in the story, Washington declines to take the case.

Notice what the film makers do with the camera angles to show what Washington is thinking as he considers what to do. His eyes focus on the picture of his wife and child, on the skin lesion on Hanks's head, and on the cigars and other things Hanks touches. The story takes place during the early years when the general public did not understand AIDS well at all. It was a time when prejudices, homophobia, and misinformation surrounded the disease. Washington's character portrays the uncertainty

Thinking Critically

How Does TV Portray Critical Thinking?

1 You can do this exercise by yourself or with a classmate. This exercise requires watching TV for two hours. Begin with a clean piece of paper and draw a line down the page. Mark one side + and the other -. With pencil and paper in hand, watch CBS, NBC, or ABC or a cable network that shows commercials along with its regular programming. Pay close attention to the commercials, not the regular programming. Note each of the people who appear on screen. If you judge that a person is portrayed as a strong critical thinker, note it, e.g., Woman in car commercial +. If you think a person is portrayed as a weak critical thinker, note that, e.g., Three guys in beer commercial -. If you cannot tell (e.g., in the car commercial there were two kids riding in the back seat but they were not doing or saying anything), do not make any notation. After one hour of watching, total up the pluses and the minuses. Now do the

same thing for another hour, but this time pay attention only to the regular programming, not the commercials. Again note every character who appears and indicate on the paper if the person is portrayed as a strong critical thinker (e.g., evil bad guy +, clever detective +) or a weak critical thinker (e.g., victim who foolishly walked into the dark alley alone -). Tally up the pluses and minuses. Based on your observations, is there a tendency or pattern that might be evident regarding the critical thinking strengths or weaknesses of children, adolescents, young adults, middle-aged people, and senior citizens?

2 Group Project—four-page mini-paper: Attitudes, while not immutable, are shaped and formed as we mature. To the extent that the disposition toward critical thinking is attitudinal, it can be affected by our experiences growing up. Begin by locat-

ing research reports (not just opinion pieces) in which credible experts report findings based on solid data about the impact of the images of ourselves we see on television and whether those images influence how we behave. Research on the power of TV stereotypes, for example, can be a good place to start. Consider what you learn through your review of the materials that you were able to find and draw on your own life experience to formulate your response to this question: What is the potential impact that the characters portrayed on TV have on the disposition toward critical thinking, which is developing in adolescents? Explain your opinion on this by providing reasons, examples, and citations. In the last part of your short paper, respond to this question: What kind of evidence would lead you to revise or reverse the opinion which you have been presenting and explaining?



^ In *Philadelphia*, the plaintiff, played by Tom Hanks, and his lawyer, played by Denzel Washington, wade through a crowd of reporters. How does Denzel Washington's character use critical thinking throughout the course of the film?

and misplaced fears of the U.S. public at that time. Not understanding AIDS or being misinformed, Washington's character is frightened for himself and for his family. Notice how he stands in the very far corner of his office, as physically far away from Hanks's character as possible. He wipes his hand against his trousers after shaking hands. The nonverbal thinking cues are so well done by the filmmakers that we are not surprised when Washington, having thought things through, refuses to take the case.

There is no question that critical thinking is wonderfully powerful. Yet, by itself it is incomplete. We need knowledge, values, and sensitivities to guide our thinking. Washington's character is sensitive to what he thinks are the dangers of the disease and what he believes (wrongly) about the ways it might be transmitted. His character uses his critical thinking skills, which turn out to be quite formidable as the film progresses. But his beliefs about AIDS are simply wrong. He makes a judgment at the time not to represent Hanks's character. It is not the same judgment he will make later in the film, after he becomes better informed. Fortunately, he has the open-mindedness to entertain the possibility of representing Hanks's character, that perhaps Hanks's character does have a winnable case, and that perhaps the risks associated with AIDS are not as great as he had at first imagined. He has the inquisitiveness and the truth-seeking to gather more accurate information. And he has the judiciousness to reconsider and to change his mind.

The expressions "mental disciplines" and "mental virtues" can be used to refer to "habits of mind" as well. The word "disciplines" in a military context and the word "virtues" in an ethical context both suggest something positive. We will use "habits of mind" because the word "habit" is neutral. Some habits are good, others bad. As will become evident, the same can be said with regard to critical thinking habits of mind. Some, like truth-seeking, are positive. Others, like indifference or intellectual dishonesty, are negative.

IS A GOOD CRITICAL THINKER AUTOMATICALLY A GOOD PERSON?

Thinking about Denzel Washington's character in *Philadelphia* raises the natural question about how critical thinking might or might not be connected with being an ethical person. We have been using the expression "strong critical thinker" instead of "good critical thinker" because of the ambiguity of the word "good." We want to praise the person as a critical thinker without necessarily making a judgment about the person's ethics. For example, a person can be adept at developing cogent arguments and very adroit at finding the flaws in other people's reasoning, but then, use these skills unethically to mislead and exploit a gullible person, perpetrate a fraud, or deliberately confuse, confound, and frustrate a project.

A person can be *strong* at critical thinking, meaning that the person can have the appropriate dispositions and be adept using his or her critical thinking skill, but still not be an ethical critical thinker. There have been people with superior thinking skills and strong habits of mind who, unfortunately, have used their talents for ruthless, horrific, and immoral purposes. It would be great if experience, knowledge, mental horsepower, and ethical virtue were all one and the same. But they are not.

To get some sense of the colossal problems that result from our collective failures to anticipate consequences, watch the documentary film *The Unforeseen* (2007, Directed by Laura Dunn). It is the remarkable story of the loss of quality of life and environmental degradation associated with real estate development in Austin, TX, over the past 50 years.



Consider, for example, the revelations that Victor Crawford, a tobacco lobbyist, makes in the clip from his *60 Minutes* interview with Leslie Stahl. You can access a transcript of the interview at www.TheThinkSpot.com. He admits that he lied, falsified information, and manipulated people in order to advance the interests of the tobacco industry. Ms. Stahl calls him out, saying that he was unethical and despicable to act that way. Crawford admits as much. He used his critical thinking skills to help sell people a product that, if used as intended by its manufacturer, was apt to cause them grave harm. Now, all these years later, he regrets having done that. The interview is part of his effort to make amends for his lies and the harm they may have caused to others.

Building Positive Habits of Mind

Critical thinking skills can be strengthened by exercising them, which is what the examples and the exercises in this book are intended to help you do. Critical thinking habits of mind can be nurtured by internalizing the values that they embody and by reaffirming the intention each day to

live by those values." Here are four specific suggestions about how to go about this.

1 Value Critical Thinking. If we value critical thinking, we desire to be ever more truth-seeking, open-minded, mindful of consequences, systematic, inquisitive, confident in our critical thinking, and mature in our judgment. We will expect to manifest that desire in what we do and in what we say. We will seek to improve our critical thinking skills.

2 Take Stock. It is always good to know where we are in our journey. The "Critical Thinking Disposition Self-Rating Form," presented earlier in this chapter, will give us a rough idea. If we have general positive critical thinking habits of mind, that should show up in the score we give ourselves using this self-rating form.

3 Be Alert for Opportunities. Each day be alert for opportunities to act on our desire by translating it into words and actions. Make a conscious effort each day to be as reflective and thoughtful as possible in addressing at least one of the many problems or decisions of the day.

4 Forgive and Persist. Forgive yourself if you happen to backslide. Pick yourself up and get right back on the path. These are ideals you are striving to achieve. You need discipline, determination, and

The Experts Worried that Schooling Might Be Harmful!

The critical thinking expert panel we talked about in Chapter 1 was absolutely convinced that critical thinking is a pervasive and purposeful human phenomenon. They insisted that strong critical thinkers should be characterized not merely by the cognitive skills they may have, but also by how they approach life and living in general.

This was a bold claim. At that time schooling in most of the world was characterized by the memorization of received truths. In the USA, the "back to basics" mantra echoed the pre-1960s Eisenhower era, when so much of schooling was focused on producing "interchangeable human parts" for an industrial manufacturing economy. Critical thinking that frees the mind to ask any question and evaluate any assumption naturally goes far beyond what the typical classroom was delivering. In fact, many of the experts feared that some of the things people experience in our schools could actually be harmful to the development and cultivation of strong critical thinking.

Critical thinking came before formal schooling was invented. It lies at the very roots of civilization. The experts saw critical thinking as a driving force in the human journey from ignorance, superstition, and savagery toward global

understanding. Consider what life would be like without the things on this list, and you will appreciate why they had such confidence in strong critical thinking. The approaches to life and living which the experts said characterized the strong critical thinker included:

- inquisitiveness and a desire to remain well-informed with regard to a wide range of topics,
- trust in the processes of reasoned inquiry,
- self-confidence in one's own abilities to reason,
- open-mindedness regarding divergent world views,
- flexibility in considering alternatives and opinions,
- understanding of the opinions of other people,
- fair-mindedness in appraising reasoning,
- honesty in facing one's own biases, prejudices, stereotypes, or egocentric tendencies,
- prudence in suspending, making, or altering judgments,

- willingness to reconsider and revise views where honest reflection suggests that change is warranted,
- alertness to opportunities to use critical thinking.

The experts went beyond approaches to life and living in general to emphasize how strong critical thinkers approach specific issues, questions, or problems. The experts said we would find strong critical thinkers striving for

- clarity in stating the question or concern,
- orderliness in working with complexity,
- diligence in seeking relevant information,
- reasonableness in selecting and applying criteria,
- care in focusing attention on the concern at hand,
- persistence though difficulties are encountered,
- precision to the degree permitted by the subject and the circumstances.

Table 5, page 25. American Philosophical Association. 1990. Critical Thinking: An Expert Consensus Statement for Purposes of Educational Assessment and Instruction. ERIC Doc. ED 315 423.

Putting the Positive Critical Thinking Habits of Mind into Practice

Here are a few suggestions about ways to translate each of the seven positive aspects of the disposition toward critical thinking into practical things to do.

Truth-seeking – Ask courageous and probing questions. Think deeply about the reasons and evidence for and against a given decision you must make. Pick one or two of your own most cherished beliefs and ask yourself what reasons and what evidence there are for those beliefs.

Open-mindedness – Listen patiently to someone who is offering opinions with which you do not agree. As you listen, show respect and tolerance toward the person offering the ideas. Show that you understand (not the same as "agree with") the opinions being presented.

Analyticity – Identify an opportunity to consciously pause to ask yourself about all the foreseeable and likely consequences of a decision you are making. Ask yourself what that choice, whether it be large or small, will mean for your future life and behavior.

Systematicity – Focus on getting more organized. Make lists of your most urgent work, family and educational responsibilities, and your assignments. Make lists of the most important priorities and obligations as well. Compare the urgent with the important. Budget time to take a systematic and methodical approach to fulfilling obligations.

Critical Thinking Confidence – Commit to resolve a challenging problem by reasoning

it through. Embrace a question, problem or issue that calls for a reasoned decision and begin working on it yourself or in collaboration with others.

Inquisitiveness – Learn something new. Go out and seek information about any topic of interest, but not one that you must learn about for work, and let the world surprise you with its variety and complexity.

Judiciousness – Revisit a decision you made recently and consider whether it is still the right decision. See if any relevant new information has come to light. Ask if the results that had been anticipated are being realized. If warranted, revise the decision to better suit your new understanding of the state of affairs.

persistence. There will be missteps along the way, but do not let them deter you. Working with a friend, mentor, or role model might make it easier to be successful, but it is really about what you want for your own thinking process.

Reconnecting Skills and Dispositions

We looked at the skills apart from the habits of mind in Chapter 2, and here in Chapter 3 we looked at the habits of mind apart from the skills. Lest we get the false impression that in real life all these elements function in isolation from each other, we should take care to reconnect the "willing and able" of critical thinking. The skills are the tools we use in making reflective judgments about what to believe or what to do.

If you feel comfortable with the idea, you may want to ask a close friend or two to rate you using the "Critical Thinking Disposition Self-Rating Form." To do this your friend would substitute replace the words "I" or "my" with references to you. This assessment could provide valuable information about how your critical thinking disposition manifests itself to others.

Positive critical thinking habits of mind predispose us to approach questions, problems, or issues by using our critical thinking skills. Because there are scientific ways to measure critical thinking skills and critical thinking habits of mind, researchers have explored how they relate by looking at data. The graphs on pages 36 and 37 are representative synopses of massive amounts of data collected over many years on tens of thousands of individuals. For our purposes, however, we can treat each dot on the graphs as if it represents only one person. The dot is located at the intersection of a total score on a standardized critical thinking skills test and a total score on a measure of a critical thinking disposition. The numbers and words along the x-axis and the y-axis indicate the range of possible scores. If one of our fictional people scored a 29 on the skills test and a 280 on the disposition measure, then we would expect to find the dot representing that person somewhere in the upper right part of the graph.¹⁴

The shape of the "cloud" of dots indicates what statisticians would describe as statistically significant positive correlation



1 Look at the descriptions of each of the four levels of the "Holistic Critical Thinking Scoring Rubric" on page 10. In each, underline the elements that call out positive or negative critical thinking habits of mind.

2 Go online and locate two editorials from this week's *New York Times* or *Washington Post*. Select any issue or topic you wish. But find something that is controversial enough that the paper published at least one pro and one con editorial. Approach the two editorials with

an open mind. Resist forming a judgment about the issue at least until you have read and considered both carefully. Evaluate both using the "Holistic Critical Thinking Scoring Rubric." Explain in detail the reasons for the score you assigned.

between critical thinking skills and critical thinking dispositions. Notice that there are a number of dots in the upper right-hand quadrant signifying strong overall critical thinking skills and a positive disposition to use those skills. There are some dots in the lower left quadrant of the chart that signify poor overall critical thinking skills and an ambivalent or negative disposition with regard to critical

thinking. And there are a number of dots clustered toward the middle and the upper middle of the chart. These three regions are marked on the next graph with green, red, and blue, respectively. What would you predict would be the challenges and advantages of engaging in joint problem solving and decision making with people in each of these three areas?

Group Critical Thinking Score Graphs

