

CRITICAL THINKING

THOUGHT AND KNOWLEDGE

SESSION 7

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Thought and knowledge

Thought-processes and certain typical mental phenomena are schematized into exact mathematical definitions, in terms of a theory which, with the assumption that learning is a relatively slow process, reduces to two sets of equations: “neuronic equations”, with fixed coefficients, which determine the instantaneous behavior, “mnemonic equations”, which determine the long-term behavior of a “model of the brain” or “thinking machine”. A qualitative but rigorous discussion shows that this machine exhibits, as a necessary consequence of the theory, many properties that are typical of the living brain: including need to “sleep”, ability spontaneously to form new ideas (patterns) which associate old ones, self-organization towards more reliable operation, and many others. Future works will deal with the quantitative solution of these equations and with concrete problems of construction—things that appear reasonably feasible. With a transposition of names, this theory could be applied to many sorts of social or, more generally, “collective” problems

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 your thinking is skilled. As a manager, leader, employee, citizen, lover, friend, parent — in every realm and situation of your life — good thinking pays off. Poor thinking, in turn, inevitably causes problems, wastes time and energy, 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 the lay of the land” in any situation we are in. We all have multiple choices to make. We need the best information to make the best choices.

What is really going on in this or that situation? Are they trying to take advantage of me? Does so-and-so really care about me? Am I deceiving myself when I believe that . . .? What are the likely consequences of failing to . . .? If I want to do . . . , what is the best way to prepare for it? How can I be more successful in doing . . .? Is this my biggest problem, or do I need to focus my attention on something else?

Successfully responding to such questions is the daily work of thinking. However, to maximize the quality of your thinking, 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.

Ask yourself these — rather unusual — questions: What have you learned about how you think? Did you ever study your thinking? What do you know about how the mind processes information? 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 “good” 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 anyone asked you to teach them what you have learned, thus far in your life, about thinking, would you really have any idea what that was or how you learned it?

If you are like most, the only honest answers to these questions run along the lines of, "Well, I suppose I really 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 really studied it. I don't know how I test it, or even if I do test it. It just happens in my mind automatically."

It is important to realize that serious study of thinking, serious thinking about thinking, is rare. It is not a subject in most colleges. It is seldom found in the thinking of our culture. 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, in fact, 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.

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. Yet once this thinking is done and we move our thinking to a higher level of quality, it is not hard to keep it at that level. Still, there is the price you have to pay to step up to the next level. One doesn't become a skillful critic of thinking over night, any more than one becomes a skillful basketball player or musician over night. To become better at thinking, you must be willing to put the work into thinking that skilled improvement always requires.

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 with your mind “moves” analogous to what accomplished athletes learn to do (through practice and feedback) with their bodies. Improvement in thinking, in other words, is similar to improvement in other domains of performance where progress is a product of sound theory, commitment, hard work, and practice.

Consider the following key ideas, which, when applied, result in a mind practicing skilled thinking. These ideas represent just a few of the many ways in which disciplined thinkers actively apply theory of mind to the mind by the mind in order to think better. In these examples, we focus on the significance of thinking clearly, sticking to the point (thinking with relevance), questioning deeply, and striving to be more reasonable. For each example, we provide a brief overview of the idea and its importance in thinking, along with strategies for applying it in life. Realize that the following ideas are immersed in a cluster of ideas within critical thinking. Though we chose these particular ideas, many others could have instead been chosen. There is no magic in these specific ideas. In short, it is important that you understand these as a sampling of all the possible ways in which the mind can work to discipline itself, to think at a higher level of quality, to function better in the world.

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1. Clarify Your Thinking

Be on the look-out for vague, fuzzy, formless, blurred thinking. Try to figure out the real meaning of what people are saying. Look on the

surface. Look beneath the surface. Try to figure out the real meaning of important news stories. Explain your understanding of an issue to someone else to help clarify it in your own mind. Practice summarizing in your own words what others say. Then ask them if you understood them correctly. You should neither agree nor disagree with what anyone says until you (clearly) understand them.

Our own thinking usually seems clear to us, even when it is not. But vague, ambiguous, muddled, deceptive, or misleading thinking are significant problems in human life. If we are to develop as thinkers, we must learn the art of clarifying thinking, of pinning it down, spelling it out, and giving it a specific meaning. Here's what you can do to begin. When people explain things to you, summarize in your own words what you think they said. When you cannot do this to their satisfaction, you don't really understand what they said. When they cannot summarize what you have said to your satisfaction, they don't really understand what you said. Try it. See what happens.

Strategies for Clarifying Your Thinking

- State one point at a time.
- Elaborate on what you mean
- Give examples that connect your thoughts to life experiences
- Use analogies and metaphors to help people connect your ideas to a variety of things they already understand (for example, critical thinking is like an onion. There are many layers to it. Just when you think you have it basically figured out, you realize there is another layer, and then another, and another and another and on and on)

Here is One Format You Can Use

- I think . . . (state your main point)
- In other words . . . (elaborate your main point)
- For example . . . (give an example of your main point)
- To give you an analogy . . . (give an illustration of your main point)

To Clarify Other People's Thinking, Consider Asking the Following

- Can you restate your point in other words? I didn't understand you.
- Can you give an example?
- Let me tell you what I understand you to be saying. Did I understand you correctly?

2. Stick to the Point

Be on the lookout for fragmented thinking, thinking that leaps about with no logical connections. Start noticing when you or others fail to stay focused on what is relevant. Focus on finding what will aid you in truly solving a problem. When someone brings up a point (however true) that doesn't seem pertinent to the issue at hand, ask, "How is what you are saying relevant to the issue?" When you are working through a problem, make sure you stay focused on what sheds light on and, thus, helps address the problem. Don't allow your mind to wander to unrelated matters. Don't allow others to stray from the main issue. Frequently ask: "What is the central question? Is this or that relevant to it? How?"

When thinking is relevant, it is focused on the main task at hand. It selects what is germane, pertinent, and related. It is on the alert for everything that connects to the issue. It sets aside what is immaterial, inappropriate, extraneous, and beside the point. What is relevant directly bears upon (helps solve) the problem you are trying to solve. When thinking drifts away from what is relevant, it needs to be brought back to what truly makes a difference. Undisciplined thinking is often guided by associations (this reminds me of that, that reminds me of this other thing) rather than what is logically connected ("If a and b are true, then c must also be true"). Disciplined thinking intervenes when thoughts wander from what is pertinent and germane concentrating the mind on only those things that help it figure out what it needs to figure out.

Ask These Questions to Make Sure Thinking is Focused on What is Relevant

- Am I focused on the main problem or task?
- How is this connected? How is that?
- Does my information directly relate to the problem or task?
- Where do I need to focus my attention?
- Are we being diverted to unrelated matters?
- Am I failing to consider relevant viewpoints?
- How is your point relevant to the issue we are addressing?
- What facts are actually going to help us answer the question?
What considerations should be set aside?
- Does this truly bear on the question? How does it connect?

3. Question Questions

Be on the lookout for questions. The ones we ask. The ones we fail to ask. Look on the surface. Look beneath the surface. Listen to how people question, when they question, when they fail to question. Look closely at the questions asked. What questions do you ask, should you ask? Examine the extent to which you are a questioner, or simply one who accepts the definitions of situations given by others.

Most people are not skilled questioners. Most accept the world as it is presented to them. And when they do question, their questions are often superficial or “loaded.” Their questions do not help them solve their problems or make better decisions. Good thinkers routinely ask questions in order to understand and effectively deal with the world around them. They question the status quo. They know that things are often different from the way they are presented. Their questions penetrate images, masks, fronts, and propaganda. Their questions make real problems explicit and discipline their thinking through those problems. If you become a student of questions, you can learn to ask powerful questions that lead to a deeper and more fulfilling life. Your questions become more basic, essential, and deep.

Strategies for Formulating More Powerful Questions

- Whenever you don't understand something, ask a question of clarification.
- Whenever you are dealing with a complex problem, formulate the question you are trying to answer in several different ways (being as precise as you can) until you hit upon the way that best addresses the problem at hand.
- Whenever you plan to discuss an important issue or problem, write out in advance the most significant questions you think need to be addressed in the discussion. Be ready to change the main question, but once made clear, help those in the discussion stick to the question, making sure the dialogue builds toward an answer that makes sense.

Questions You Can Ask to Discipline Your Thinking

- What precise question are we trying to answer?
- Is that the best question to ask in this situation?
- Is there a more important question we should be addressing?
- Does this question capture the real issue we are facing?
- Is there a question we should answer before we attempt to answer this question?
- What information do we need to answer the question?

- What conclusions seem justified in light of the facts?
- What is our point of view? Do we need to consider another?
- Is there another way to look at the question?
- What are some related questions we need to consider?
- What type of question is this: an economic question, a political question, a legal question, etc.?

4. Be Reasonable

Be on the lookout for reasonable and unreasonable behaviors — yours and others. Look on the surface. Look beneath the surface. Listen to what people say. Look closely at what they do. Notice when you are unwilling to listen to the views of others, when you simply see yourself as right and others as wrong. Ask yourself at those moments whether their views might have any merit. See if you can break through your defensiveness to hear what they are saying. Notice unreasonableness in others. Identify times when people use language that makes them appear reasonable, though their behavior proves them to be otherwise. Try to figure out why you, or others, are being unreasonable. Might you have a vested interest in not being open-minded? Might they?

One of the hallmarks of a critical thinker is the disposition to change one's mind when given good reason to change. Good thinkers want to change their thinking when they discover better thinking. They can be moved by reason. Yet, comparatively few people are reasonable. Few are willing to change their minds once set. Few are willing to suspend their beliefs to fully hear the views of those with which they disagree. How would you rate yourself?

Strategies for Becoming More Reasonable

Say aloud, "I'm not perfect. I make mistakes. I'm often wrong." See if you have the courage to admit this during a disagreement: "Of course, I may be wrong. You may be right."

Practice saying in your own mind, "I may be wrong. I often am. I'm willing to change my mind when given good reasons." Then look for opportunities to make changes in your thinking.

Ask yourself, "When was the last time I changed my mind because someone gave me better reasons for his (her) views than I had for mine?" (To what extent are you open to new ways of looking at things? To what extent can you objectively judge information that refutes what you already think?)

Realize That You are Being Close-Minded If You

- a. are unwilling to listen to someone's reasons
- b. are irritated by the reasons people give you
- c. become defensive during a discussion

After you catch yourself being close-minded, analyze what was going on in your mind by completing these statements:

- a. I realize I was being close-minded in this situation because . . .
- b. The thinking I was trying to hold onto is . . .

c. Thinking that is potentially better is . . .

d. This thinking is better because . . .

In closing, let me remind you that the ideas in this article are a very few of the many ways in which critical thinkers bring intellectual discipline to bear upon their thinking. The best thinkers are those who understand the development of thinking as a process occurring throughout many years of practice in thinking. They recognize the importance of learning about the mind, about thoughts, feelings and desires and how these functions of the mind interrelate. They are adept at taking thinking apart, and then assessing the parts when analyzed. In short, they study the mind, and they apply what they learn about the mind to their own thinking in their own lives.

The extent to which any of us develops as a thinker is directly determined by the amount of time we dedicate to our development, the quality of the intellectual practice we engage in, and the depth, or lack thereof, of our commitment to becoming more reasonable, rational, successful persons.

Thinking Gets Us Into Trouble Because We Often:

- jump to conclusions
- fail to think-through implications

- lose track of their goal
- are unrealistic
- focus on the trivial
- fail to notice contradictions
- accept inaccurate information
- ask vague questions
- give vague answers
- ask loaded questions
- ask irrelevant questions
- confuse questions of different types
- answer questions we are not competent to answer
- come to conclusions based on inaccurate or irrelevant information
- ignore information that does not support our view
- make inferences not justified by our experience
- distort data and state it inaccurately
- fail to notice the inferences we make
- come to unreasonable conclusions

- fail to notice our assumptions
- often make unjustified assumptions
- miss key ideas
- use irrelevant ideas
- form confused ideas
- form superficial concepts
- misuse words

- ignore relevant viewpoints
- cannot see issues from points of view other than our own
- confuse issues of different types
- are unaware of our prejudices
- think narrowly
- think imprecisely
- think illogically
- think one-sidedly
- think simplistically
- think hypocritically
- think superficially
- think ethnocentrically
- think egocentrically
- think irrationally
- do poor problem solving
- make poor decisions
- are poor communicators
- have little insight into our own ignorance

A How-To List for Dysfunctional Living

Most people have no notion of what it means to take charge of their lives. They don't realize that the quality of their lives depends on the quality of their thinking. We all engage in numerous dysfunctional practices to avoid facing problems in our thinking. Consider the following and ask yourself how many of these dysfunctional ways of thinking you engage in:

1. Surround yourself with people who think like you. Then no one will criticize you.
2. Don't question your relationships. You then can avoid dealing with problems within them.
3. If critiqued by a friend or lover, look sad and dejected and say, "I thought you were my friend!" or "I thought you loved me!"
4. When you do something unreasonable, always be ready with an excuse. Then you won't have to take responsibility. If you can't think of an excuse, look sorry and say, "I can't help how I am!"
5. Focus on the negative side of life. Then you can make yourself miserable and blame it on others.
6. Blame others for your mistakes. Then you won't have to feel responsible for your mistakes. Nor will you have to do anything about them.
7. Verbally attack those who criticize you. Then you don't have to bother listening to what they say.
8. Go along with the groups you are in. Then you won't have to figure out anything for yourself.
9. Act out when you don't get what you want. If questioned, look indignant and say, "I'm just an emotional person. At least I don't keep my feelings bottled up!"
10. Focus on getting what you want. If questioned, say, "If I don't look out for number one, who will?"

Critical thinkers routinely apply the intellectual standards to the elements of reasoning in order to develop intellectual traits.

THE STANDARDS	
Clarity	Precision
Accuracy	Significance
Relevance	Completeness
Logicalness	Fairness
Breadth	Depth

Must be applied to

THE ELEMENTS	
Purposes	Inferences
Questions	Concepts
Points of view	Implications
Information	Assumptions

As we learn to develop

INTELLECTUAL TRAITS	
Intellectual Humility	Intellectual Perseverance
Intellectual Autonomy	Confidence in Reason
Intellectual Integrity	Intellectual Empathy
Intellectual Courage	Fairmindedness



As you see, the list is almost laughable.

And so it would be if these irrational ways of thinking didn't lead to problems in life. But they do. And often. Only when we are faced with the absurdity of dysfunctional thinking, and can see it at work in our lives, do we have a chance to alter it. The strategies outlined in this guide presuppose your willingness to do so.