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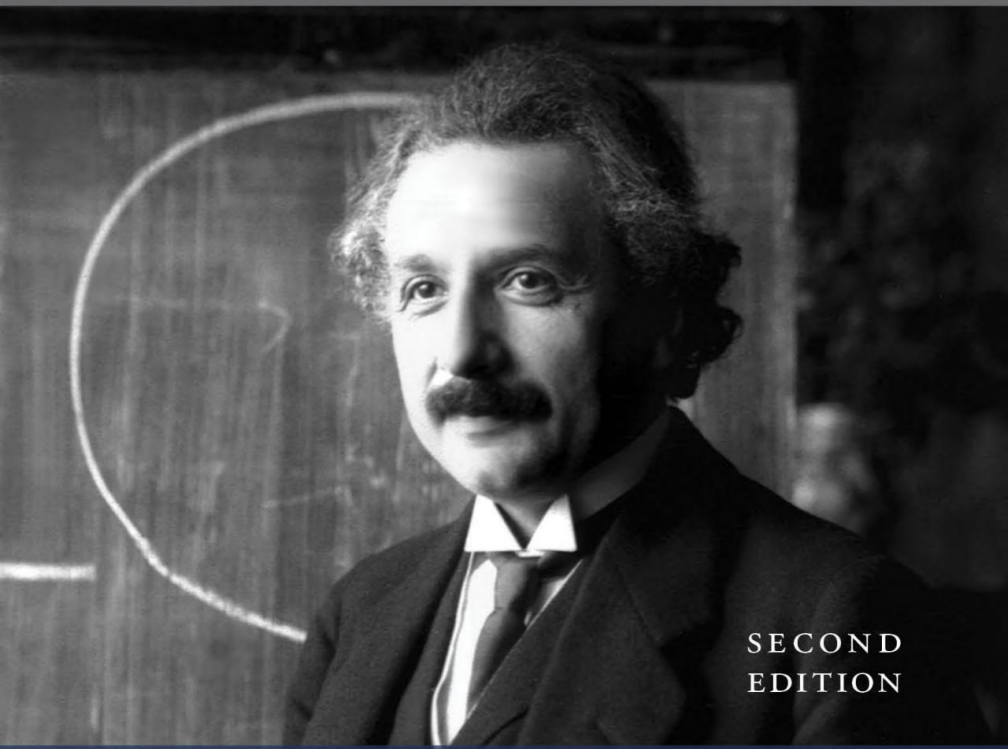

SECOND EDITION

THE THINKER'S GUIDE TO ANALYTIC THINKING

How to Take Thinking Apart and What to Look for When You Do

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Part I: Understanding the Basic Theory of Analysis

This section provides the foundational theory essential to analysis. It delineates the eight basic structures present in all thinking.

Part 2: Getting Started: Some First Steps

This section enumerates the most important foundational moves in analysis.

Part 3: Using Analysis to Figure Out the Logic of Anything

This section provides a range of sample analyses (as well as templates for analysis).

Part 4: Taking Your Understanding to a Deeper Level

This section explains the elements more comprehensively, differentiating skilled from unskilled reasoners.

Why a Guide on Analytic Thinking?

Analysis and evaluation are recognized as crucial skills for all students to master. And for good reason. These skills are required in learning any significant body of content in a non-trivial way. Students are commonly asked to analyze poems, mathematical formulas, biological systems, chapters in textbooks, concepts and ideas, essays, novels, and articles—just to name a few. Yet how many students can explain what analysis requires? How many have a clear conception of how to think it through? Which of our graduates could complete the sentence: "Whenever I am asked to analyze something, I use the following framework:…"

The painful fact is that few students have been taught how to analyze. Hence, when they are asked to analyze something scientific, historical, literary, or mathematical—let alone something ethical, political, or personal—they lack a framework to empower them in the task. They muddle through their assignment with only the vaguest sense of what analysis requires. They have no idea how sound analysis can lead the way to sound evaluation and assessment. Of course, students are not alone. Many adults are similarly confused about analysis and assessment as intellectual processes.

Yet what would we think of an auto mechanic who said, "I'll do my best to fix your car, but frankly I've never understood the parts of the engine," or of a grammarian who said, "Sorry, but I have always been confused about how to identify the parts of speech." Clearly, students should not be asked to do analysis if they do not have a clear model, and the requisite foundations, for the doing of it. Similarly, we should not ask students to engage in assessment if they have no standards upon which to base their assessment. Subjective reaction should not be confused with objective evaluation.

To the extent that students internalize this framework through practice, they put themselves in a much better position to begin to think historically (in their history classes), mathematically (in their math classes), scientifically (in their science classes), and therefore more skillfully (in all of their classes). When this model is internalized, students become better students because they acquire a powerful "system-analyzing-system."

This thinker's guide is a companion to The Miniature Guide to Critical Thinking Concepts and Tools. It supports, and is supported by, all of the other miniature guides in the series. It exemplifies why thinking is best understood and improved when we are able to analyze and assess it EXPLICITLY. The intellectual skills it emphasizes are the same skills needed to reason through the decisions and problems inherent in any and every dimension of human life.

Why the Analysis of Thinking is Important

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 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. If we want to think well, we must understand at least the rudiments of thought, the most basic structures out of which all thinking is made. We must learn how to take thinking apart.

All Thinking Is Defined by the Eight Elements That Make It Up

Eight basic structures are present in all thinking: Whenever we think, we think for a purpose within a point of view based on assumptions leading to implications and consequences. We use concepts, ideas and theories to interpret data, facts, and experiences in order to answer questions, solve problems, and resolve issues.

Thinking, then:

- **generates purposes**
- **raises questions**
- **uses information**
- **utilizes concepts**

- **makes inferences**
- **makes assumptions**
- **generates implications**
- **embodies a point of view**

Each of these structures has implications for the others. If you change your purpose or agenda, you change your questions and problems. If you change your questions and problems, you are forced to seek new information and data. If you collect new information and data…

All Humans Use Their Thinking To Make Sense of the World

The words *thinking* and *reasoning* are used in everyday life as virtual synonyms. Reasoning, however, has a more formal flavor. This is because it highlights the inference-drawing capacity of the mind.

Reasoning occurs whenever the mind draws conclusions on the basis of reasons. We draw conclusions whenever we make sense of things. The result is that whenever we think, we reason. Usually we are not aware of the full scope of reasoning implicit in our minds.

We begin to reason from the moment we wake up in the morning. We reason when we figure out what to eat for breakfast, what to wear, whether to make certain purchases, whether to go with this or that friend to lunch. We reason as we interpret the oncoming flow of traffic, when we react to the decisions of other drivers, when we speed up or slow down. One can draw conclusions, then, about everyday events or, really, about anything at all: about poems, microbes, people, numbers, historical events, social settings, psychological states, character traits, the past, the present, the future.

By reasoning, then, we mean making sense of something by giving it some meaning in our mind. Virtually all thinking is part of our sense-making activities. We hear scratching at the door and think, "It's the dog." We see dark clouds in the sky and think, "It looks like rain." Some of this activity operates at a subconscious level. For example, all of the sights and sounds about us have meaning for us without our explicitly noticing that they do. Most of our reasoning is unspectacular. Our reasoning tends to become explicit only when someone challenges it and we have to defend it ("Why do you say that Jack is obnoxious? I think he is quite funny"). Throughout life, we form goals or purposes and then figure out how to pursue them. Reasoning is what enables us to come to these decisions using ideas and meanings.

On the surface, reasoning often looks simple, as if it had no component structures. Looked at more closely, however, it implies the ability to engage in a set of interrelated intellectual processes. This thinker's guide is largely focused on making these intellectual processes explicit. It will enable you to better understand what is going on beneath the surface of your thought.

To Analyze Thinking We Must Learn to Identify and Question its Elemental Structures

35 Dimensions of Critical Thought

A. Affective Dimensions

- thinking independently
- developing insight into egocentricity or sociocentricity
- exercising fairmindedness
- exploring thoughts underlying feelings and feelings underlying thought
- developing intellectual humility and suspending judgment
- developing intellectual courage
- developing intellectual good faith or integrity
- developing intellectual perseverance
- developing confidence in reason

B. Cognitive Dimensions—Macro-Abilities

- refining generalizations and avoiding oversimplifications
- comparing analogous situations: transferring insights to new contexts
- developing one's perspective: creating or exploring beliefs, arguments, or theories
- clarifying issues, conclusions, or beliefs
- clarifying and analyzing the meanings of words or phrases
- developing criteria for evaluation: clarifying values and standards
- evaluating the credibility of sources of information
- questioning deeply: raising and pursuing root or significant questions
- analyzing or evaluating arguments, interpretations, beliefs, or theories
- generating or assessing solutions
- analyzing or evaluating actions or policies
- reading critically: clarifying or critiquing texts
- listening critically: the art of silent dialogue
- making interdisciplinary connections

35 Dimensions of Critical Thought (cont.)

- practicing Socratic discussion: clarifying and questioning beliefs, theories, or perspectives
- reasoning dialogically: comparing perspectives, interpretations, or theories
- reasoning dialectically: evaluating perspectives, interpretations, or theories

C. Cognitive Dimensions—Micro-Skills

- comparing and contrasting ideals with actual practice
- thinking precisely about thinking: using critical vocabulary
- noting significant similarities and differences
- examining or evaluating assumptions for justifiability
- distinguishing relevant from irrelevant facts
- making plausible inferences, predictions, or interpretations
- giving reasons and evaluating evidence and alleged facts
- recognizing contradictions
- exploring logical implications and consequences

A Checklist for Reasoning

1) **All reasoning has a PURPOSE.**
   - Take time to state your purpose clearly.
   - Distinguish your purpose from related purposes.
   - Check periodically to be sure you are still on target.
   - Choose significant and realistic purposes.

2) **All reasoning is an attempt to figure something out, to settle some QUESTION, to solve some problem.**
   - State the question at issue clearly and precisely.
   - Express the question in several ways to clarify its meaning and scope.
   - Break the question into sub-questions.
   - Distinguish questions that have definitive answers from those that are a matter of opinion and from those that require consideration of multiple viewpoints.

3) **All reasoning is based on ASSUMPTIONS.**
   - Clearly identify your assumptions and determine whether they are justifiable.
   - Consider how your assumptions are shaping your point of view.

4) **All reasoning is done from some POINT OF VIEW.**
   - Identify your point of view.
   - Seek other points of view and identify their strengths as well as weaknesses.
   - Strive to be fairminded in evaluating all points of view.

A Checklist for Reasoning (cont.)

5) **All reasoning is based on DATA, INFORMATION and EVIDENCE.**
   - Restrict your claims to those supported by the data you have.
   - Search for information that opposes your position as well as information that supports it.
   - Make sure that all information used is clear, accurate and relevant to the question at issue.
   - Make sure you have gathered sufficient information.

6) **All reasoning is expressed through, and shaped by, CONCEPTS and IDEAS.**
   - Identify key concepts and explain them clearly.
   - Consider alternative concepts or alternative definitions of concepts.
   - Make sure you are using concepts with precision.

7) **All reasoning contains INFERENCES or INTERPRETATIONS by which we draw CONCLUSIONS and give meaning to data.**
   - Infer only what the evidence implies.
   - Check inferences for their consistency with each other.
   - Identify assumptions underlying your inferences.

8) **All reasoning leads somewhere or has IMPLICATIONS and CONSEQUENCES.**
   - Trace the implications and consequences that follow from your reasoning.
   - Search for negative as well as positive implications.
   - Consider all possible consequences.

Think About *Purpose*

Your purpose is your goal, your objective, what you are trying to accomplish. We also use the term to include functions, motives, and intentions.

You should be clear about your purpose, and your purpose should be justifiable.

Questions which target purpose:

- What is your, my, their purpose in doing _____?
- What is the objective of this assignment (task, job, experiment, policy, strategy, etc.)?
- Should we question, refine, modify our purpose (goal, objective, etc.)?
- Why did you say…?
- What is your central aim in this line of thought?
- What is the purpose of this meeting (chapter, relationship, action)?
- What is the purpose of education?
- What is the function of this _____ (bodily system, machine, tool, economic policy, plant, ecosystem)?

Watch Your *Inferences*

Inferences are interpretations or conclusions you come to. Inferring is what the mind does in figuring something out.

Inferences should logically follow from the evidence. Infer no more or less than what is implied in the situation.

Questions you can ask to check your inferences:

- What conclusions am I coming to?
- Is my inference logical?
- Are there other conclusions I should consider?
- Does this interpretation make sense?
- Does our solution necessarily follow from our data?
- How did you reach that conclusion?
- What are you basing your reasoning on?
- Is there an alternative plausible conclusion?
- Given all the facts what is the best possible conclusion?
- How shall we interpret these data?

Check Your *Assumptions*

Assumptions are beliefs you take for granted. They usually operate at the subconscious or unconscious level of thought.

Make sure that you are clear about your assumptions and they are justified by sound evidence.

Questions you can ask about your assumptions:

- What am I taking for granted?
- Am I assuming something I shouldn't?
- What assumption is leading me to this conclusion?
- What is… (this policy, strategy, explanation) assuming?
- What exactly do sociologists (historians, mathematicians, etc.) take for granted?
- Why are you assuming…?
- What is being presupposed in this theory?
- What are some important assumptions I make about my roommate, my friends, my parents, my instructors, my country?

The main purpose of this article is to show why the news media are not likely to alter their traditional practices of slanting the news in keeping with audience preconceptions.

The key question that the author is addressing is: "Why is it not possible for the news media to reform?"

The most important information in this article is:

1. information about how and why the news media currently operates:
   a. that the news media slant stories to fit the viewpoint of their audience. "Most people are not interested in having their views broadened…Like football fans they want the home team to win… The overwhelming mass of persons in the broader society are drawn to news articles that reinforce, and do not question, their fundamental views or passions."
   b. that the fundamental purpose of the mainstream news media is to make money. "As long as the mass of people want simplistic news articles…the news media will generate such articles for them. The profit and ratings of news sources that routinely reinforce the passions and prejudices of their readers will continue to soar."
2. information about how the news media would have to change to be more intellectually responsible:
   a. that the news media would have to actively enter differing world views "Imagine Israeli journalists writing articles that present the Palestinian point of view sympathetically. Imagine Pakistani journalists writing articles that present the Indian point of view sympathetically."
   b. That the news media would have to "develop insights into their own sociocentrism."

The main inferences in this article are: "As long as the overwhelming mass of persons in the broader society are drawn to news articles that reinforce, and do not question, their fundamental views or passions," the news will be presented in a biased way. Because the fundamental purpose of the media is to make money, and the only way people will buy papers is if their sociocentric views are reinforced and not questioned, the media will continue to distort events in accordance with audience views.

The key concepts that guide the author's reasoning in this article are: biased and unbiased journalism, egocentrism and sociocentrism, propaganda. (Each of these concepts should be elaborated.)

The main assumptions underlying the author's thinking are: The driving force behind the news media is vested interest – i.e. making money; that the news media therefore pander to their readers' views so as to sell more papers; but that, at the same time, the news media must appear to function objectively and fairly.

If this line of reasoning is justified, the implications are: Citizens need to think critically about the news media and how they systematically distort stories in accordance with reader bias. They need to notice how their own sociocentric views are intensified by what they read.

The main point of view presented in this article is: The world news media function as profit-making enterprises that structure the news to pander to reader and society prejudices.