

Thinker's Guide Library

The Nature and Functions of

CRITICAL & CREATIVE THINKING

THIRD EDITION

RICHARD PAUL and LINDA ELDER



ROWMAN & LITTLEFIELD
Lanham • Boulder • New York • London

Letter to the Reader

To the untutored, creative and critical thinking often seem to be opposite forms of thought — the first based on irrational or unconscious forces, the second on rational and conscious processes; the first undirectable and unteachable, the second directable and teachable. There is some, but very little, truth in this view. The truth in it is that there is no known way to generate creative geniuses, or to get students to produce novel, ground-breaking ideas. There are manifestations of creativity that we do not fully understand. The same is true of forms of criticality. Yet there are ways to teach simultaneously for both creative and critical thinking. To do so requires that we focus on these terms in practical, everyday contexts, that we keep their central meanings in mind, that we seek insight into how they overlap and interact with one another. When we understand critical and creative thought truly and deeply, we recognize them as inseparable, integrated, and unitary.

We believe that creative thinking, especially, must be demystified and brought down to earth. For this reason, we deal with it in this guide not only in terms of its highest manifestation (in the work of geniuses), but also in its most humble manifestations (in everyday perception and thought).

In learning new concepts, in making sense of our experience, in apprehending a new subject field or language, in reading, writing, speaking, and listening, our minds engage in full-fledged (though commonplace) creative acts. To understand how and why this is so, we need not appeal to the esoteric, the recondite, or the arcane.

To live productively, we need to internalize and use intellectual standards to assess our thinking (criticality). We also need to generate — through creative acts of the mind — the products to be assessed. That minds create meanings is not in doubt; whether they create meanings that are useful, insightful, or profound is. Imagination and reason are an inseparable team. They function best in tandem, like the right and left legs in walking or running. Studying either one separately only ensures that both remain mysterious and puzzling, or, just as unfortunate, are reduced to stereotype and caricature.



Richard Paul
Center for Critical Thinking



Linda Elder
Foundation for Critical Thinking

Contents

Part I: The Very Idea of Critical and Creative Thinking

The Inseparability of Critical and Creative Thought

Criticality assesses; creativity originates. 4–8

Thinking That Grasps the Logic of Things

All thought involves systems of meanings. Thinking should assess what it creates. 8–9

Reasoning as a Creative Act

Every genuine act of figuring out anything is a new making, a new series of creative acts. 9–10

Creative Genius — an Exception?

History teaches us that great minds require cultivation and committed intellectual work. 11

Language as a Guide

Genius is better understood in relation to talent, giftedness, aptitude, capacity, ability, and intelligence. 11–12

The Narrow-Minded Genius

Genius is often specialized, limited to particular intellectual domains 13–14

The Interplay Among Inborn Gifts, Environment, and Self-Motivation

Aristotle, Beethoven, Curie, Da Vinci, Galileo, Michelangelo 14–18

The Questioning Minds of Newton, Darwin, and Einstein

Newton, Darwin, and Einstein exemplify the importance of questioning and commitment in developing genius. 18–20

Creativity—Not Mystified

Creativity is best understood in simple everyday thought. 20–21

The Elements of Thought

Thinking is better understood and assessed when its elements are identified and analyzed 21–24

Intellectual Standards

Only when we construct and use intellectual standards can we effectively assess thinking. 24–26

Critical Thinking Applied to the Arts

Creative production must be critically assessed. 26–29

Part II: Critical/Creative Thinking and the Foundations of Meaningfulness

Figuring Out the Logic of Things

In thinking critically, we take command of the meanings we create.....30–32

Learning Concepts and Language

To learn concepts and use language, we must create them through mental acts.....33–34

Critiquing Human Thinking

To think well, we must routinely critique our egocentric tendencies and transform irrational thinking into rational thinking.34–36

Learning Academic Disciplines

To learn a discipline, we must create its system in our minds and critically assess the systems we create.36–37

Questioning

To conceive and formulate fruitful questions, we must call upon both creativity and criticality.....37–38

Reading, Writing, Speaking, and Listening

Reading, writing, speaking, and listening are all dialogical, requiring multiple acts of assessment and creativity.38–45

Conclusion 46

PART I

The Very Idea of Critical and Creative Thinking

The Inseparability of Critical and Creative Thought

The critical and creative functions of the mind are so interwoven that neither can be separated from the other without an essential loss to both.

— Anonymous

Criticality assesses; creativity originates.

For several reasons the relationship between criticality and creativity is commonly misunderstood. One reason is cultural, resulting largely from the mass media's portrayal of creative and critical persons. The media frequently represent the creative person as a cousin to the nutty professor, highly imaginative, spontaneous, emotional, a source of off-beat ideas, but often out of touch with everyday reality. The critical person, in turn, is wrongly represented as given to fault-finding, as skeptical, negative, captious, severe, and hypercritical; as focused on trivial faults, either unduly exacting or perversely hard to please; lacking in spontaneity, imagination, and emotion.

These cultural stereotypes are not validated by precise use of the words critical and creative. For example, in *Webster's Dictionary of Synonyms*, the word "critical"

when applied to persons who judge and to their judgments, not only may, but in very precise use does, imply an effort to see a thing clearly and truly so that not only the good in it may be distinguished from the bad and the perfect from the imperfect, but also that it as a whole may be fairly judged and valued.

In *Webster's New World Dictionary*, the word "creative" has three interrelated meanings:

1) creating or able to create, 2) having or showing imagination and artistic or intellectual inventiveness (creative writing), and 3) stimulating the imagination and inventive powers.

Accordingly, **critical** and **creative** thought are both achievements of thought. Creativity masters a process of making or producing, criticality a process of assessing or judging. The very definition of the word “creative” implies a critical component (e.g., “having or showing imagination and artistic or intellectual inventiveness”). When engaged in high-quality thought, the mind must simultaneously produce and assess, both generate and judge the products it fabricates. In short, sound thinking requires both imagination and intellectual standards.

Throughout this guide we elaborate on the essential idea that intellectual discipline and rigor are at home with originality and productivity, and also that these supposed poles of thinking (critical and creative thought) are inseparable aspects of excellence of thought. Whether we are dealing with the most mundane intellectual acts of the mind or those of the most imaginative artist or thinker, the creative and the critical are interwoven. It is the nature of the mind to create thoughts, though the quality of that creation varies enormously from person to person, as well as from thought to thought. Achieving quality requires standards of quality — and hence, criticality.

In this guide, then, we explore the interdependence of criticality and creativity, exemplifying this interdependence at the most complex level of thought (that of genius) as well as the simplest level of thought (that of making sense of ordinary objects in everyday experience).

We also explore a corollary theme: that all creation of meaning tends toward systems of meanings rather than existing in the mind as unconnected atomic particles. This is integral to the nature of thought itself. The construction of any meaning assumes other meanings and implies yet further meanings (which in turn imply still further meanings). When attempting to understand any meaning, humans naturally seek to place it in a cluster of meanings, however partial their understanding might be. When they attempt to understand an idea as a thing unto itself, it doesn't take root in the mind. It doesn't connect to the systems of meanings within the mind. In short, for humans to think well, we must think within systems. We must create systems of meaning and assess our creations for accuracy, relevance, and adequacy. More on this point later.

Let's begin with some fundamentals. First, **all thinking is not of the same quality**. High-quality thinking is thinking that does the job set for it. It is thinking that accomplishes the purposes of thinking. If thinking lacks a purpose — if it is aimless — it may chance upon something of value to the thinker. But more often it will simply wander into an endless stream of unanalyzed associations from

regimentation “created in him a deep suspicion of authority. This feeling lasted all his life, without qualification.”

Einstein 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.” He failed his entrance examination to the Zurich Polytechnic. When he finally passed, the examinations so constrained his mind that, when he had graduated, he did not want to think about scientific problems for a year. His final exam was so nondistinguished that afterward he was refused a post as an assistant (the lowest grade of postgraduate job). Exam-taking, then, was not his forte. Thinking critically and creatively were.

Einstein had the basic critical thinking ability to cut problems down to size: “One of his greatest intellectual gifts, in small matters as well as great, was to strip off the irrelevant frills from a problem.”

When we consider the work of these three thinkers, Newton, Darwin, and Einstein, we find not the unfathomable, genius mind but, rather, thinkers who combined critical and creative thought in the passionate, but non-esoteric, pursuit of truth.

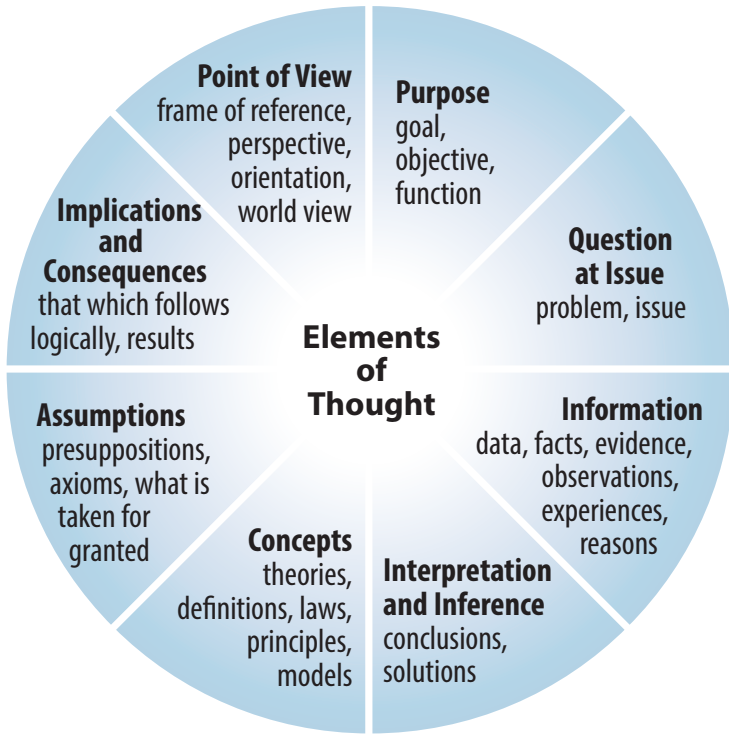
Creativity — Not Mystified

A careful examination of the history of creative people, we believe, supports our central claim that critical and creative thought are intimately related. Each without the other is of limited use. Creativity without criticality is mere novelty. Criticality without creativity is bare negativity. Native giftedness cannot be developed without some cultivation and environmental support. For example,

**Creativity
is best
understood
in simple
everyday
thought.**

Einstein never could have become one of the world's greatest scientists had he been born to a sub-Saharan mother living in absolute poverty. Through cultivation and support, both judiciousness and originality must be encouraged — not to mention the intellectual courage and perseverance that enable persons of great talent to study and develop through many years of challenging intellectual work.

The material point here is that creativity should not be mystified. Much of what appears to be inexplicable can be explained — at least in large part — by mundane accounts. Even those born with extraordinary gifts need the corrective and expansive power



Here are each of the creative acts implicit in analytic thought.

1. **Purpose, goal, or end in view:** Whenever we reason, we reason to some end, to achieve some purpose, to satisfy some desire or fulfill some need. One source of problems in reasoning is traceable to defects at the level of goal, purpose, or end. If we create goals that are unrealistic or contradictory to other goals we have, the reasoning we use to achieve our goals is problematic.
2. **Question at issue (or problem to be solved):** Whenever we attempt to reason, there is at least one question at issue, at least one problem to be solved. One area of concern for the reasoner therefore should be the creation or formulation of the question to be answered or problem to be solved. If we are not clear about the question we are asking, or how the question relates to our basic purpose or goal, we will not be able to find a reasonable answer to it, or an answer that will serve our purpose. As originators of our questions, we are authors of our own vagueness, muddle, or clarity.