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Welcome to Business Breathers

Learning and enabling critical thinking

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Taking businesses, careers and ideas to the next level

Critical thinking: How to be more powerful than Thanos and dominate the galaxy

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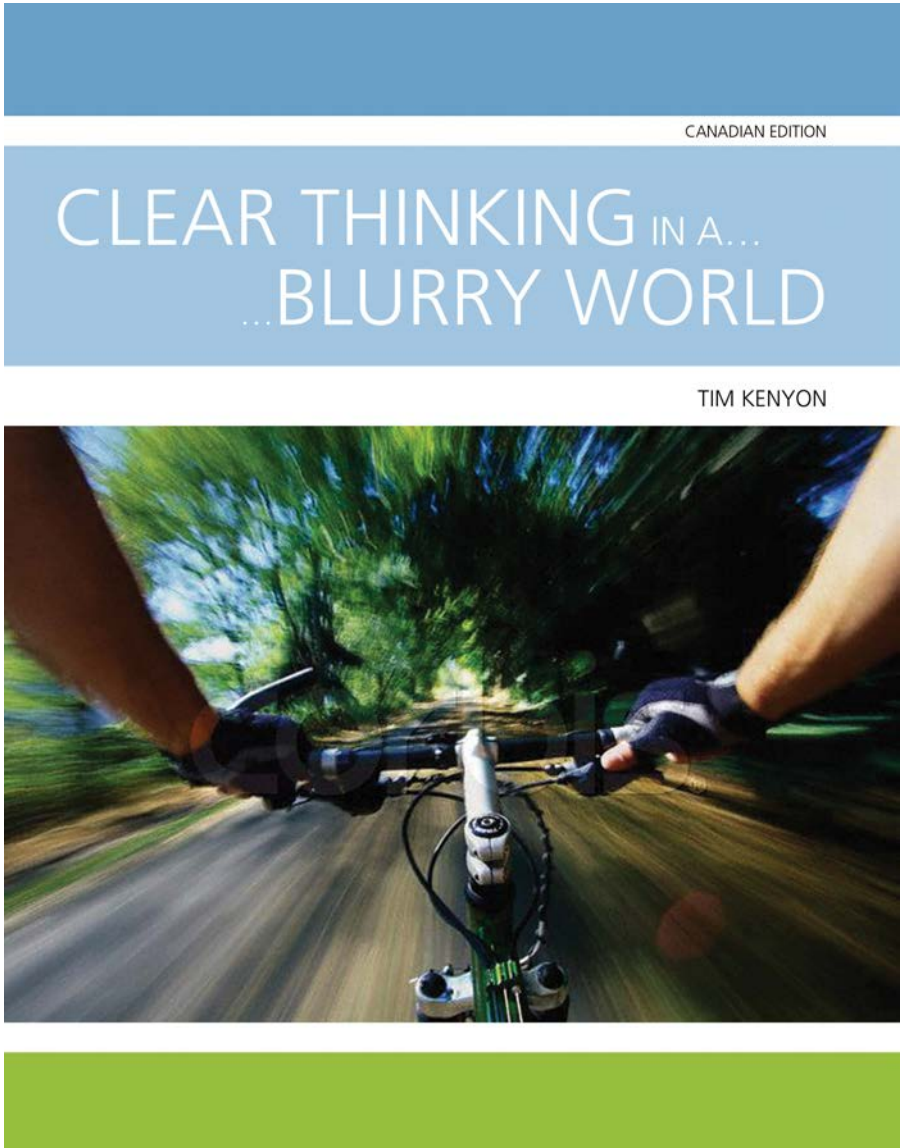
Trust me, I wrote a book about this



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Outline

1. Critical thinking: its promise and problem
2. More and less useful ways to think about critical thinking
3. The surprising role of infrastructure, systems, social skills
4. What does it look like in practice to take these elements seriously?

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1. Critical thinking: its promise and problem

- Everyone thinks critical thinking is very important, and probably more important now than it's ever been.

- Many of the people who think this seem to have little clear idea of what critical thinking is.

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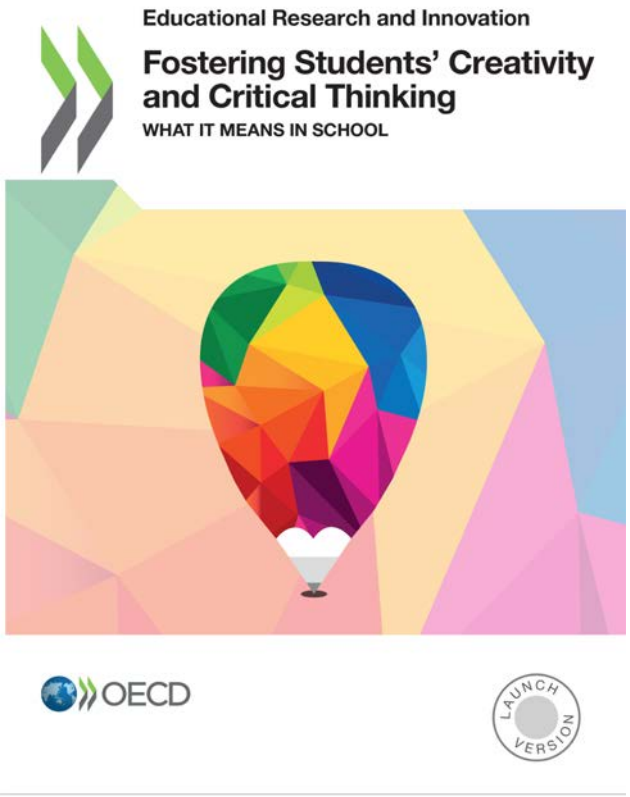
1. Critical thinking: its promise and problem

Critical thinking and creativity are becoming increasingly important in the labour market, and contribute to a better personal and civic life. People will increasingly have to contribute to and absorb innovation. Moreover, with artificial intelligence and robotics possibly leading to automation prospects for a sizeable share of the economy, skills that are less easy to automate such as creativity and critical thinking become more valued. Even if there was no economic argument, creativity and critical thinking contribute to human well-being and to the good functioning of democratic societies.

Vincent-Lancrin et al 2019, p. 13.



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1. Critical thinking: its promise and problem

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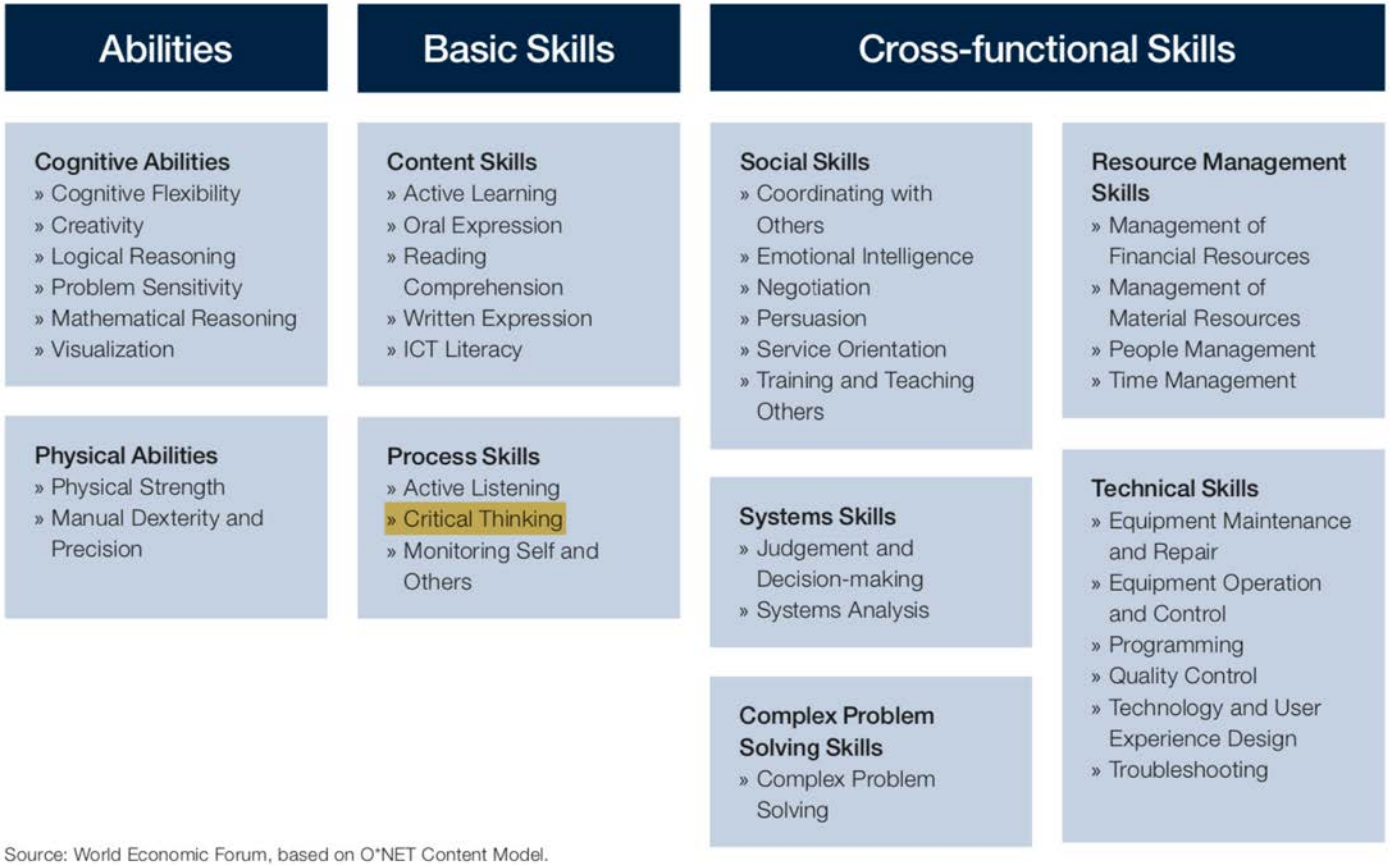
1. Critical thinking: its promise and problem

Figure 9: Core work-related skills



Source: World Economic Forum, based on O*NET Content Model.

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1. Critical thinking: its promise and problem

Key skills for 2020	Skills family
Complex Problem Solving	Complex Problem Solving Skills
Critical Thinking	Process Skills
Cognitive Flexibility	Cognitive Abilities
Mathematical Reasoning	Cognitive Abilities
Active Learning	Content Skills

2. More and less useful ways to think about critical thinking

- Some attempt an inventory of the skills implemented in critical thinking.

- Robert Ennis, “A Super-Streamlined Conception of Critical Thinking” (2002).

2. More and less useful ways to think about critical thinking

A SUPER-STREAMLINED CONCEPTION OF CRITICAL THINKING
Robert H. Ennis, 6/20/02

Assuming that critical thinking is reasonable reflective thinking focused on deciding what to believe or do, a critical thinker:

1. Is open-minded and mindful of alternatives
2. Tries to be well-informed
3. Judges well the credibility of sources
4. Identifies conclusions, reasons, and assumptions
5. Judges well the quality of an argument, including the acceptability of its reasons, assumptions, and evidence
6. Can well develop and defend a reasonable position
7. Asks appropriate clarifying questions
8. Formulates plausible hypotheses; plans experiments well
9. Defines terms in a way appropriate for the context
10. Draws conclusions when warranted, but with caution
11. Integrates all items in this list when deciding what to believe or do

Critical Thinkers are disposed to:

1. Care that their beliefs be true, and that their decisions be justified; that is, care to "get it right" to the extent possible. This includes the dispositions to

> *a. Seek alternative hypotheses, explanations, conclusions, plans, sources, etc., and be open to them*
> *b. Endorse a position to the extent that, but only to the extent that, it is justified by the information that is available*
> *c. Be well informed*
> *d. Consider seriously other points of view than their own*

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2. More and less useful ways to think about critical thinking

2. Care to present a position honestly and clearly, theirs as well as others'. This includes the dispositions to

> *a. Be clear about the intended meaning of what is said, written, or otherwise communicated, seeking as much precision as the situation requires*
> *b. Determine, and maintain focus on, the conclusion or question*
> *c. Seek and offer reasons*
> *d. Take into account the total situation*
> *e. Be reflectively aware of their own basic beliefs*

3. Care about the dignity and worth of every person (a correlative disposition). This includes the dispositions to

> *a. Discover and listen to others' view and reasons*
> *b. Avoid intimidating or confusing others with their critical thinking prowess, taking into account others' feelings and level of understanding*
> *c. Be concerned about others' welfare*

Critical Thinking Abilities:

Ideal critical thinkers have the ability to
(The first three items involve elementary clarification.)

1. Focus on a question

> *a. Identify or formulate a question*
> *b. Identify or formulate criteria for judging possible answers*
> *c. Keep the situation in mind*

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2. More and less useful ways to think about critical thinking

2. Analyze arguments

> *a. Identify conclusions*
> *b. Identify stated reasons*
> *c. Identify unstated reasons*
> *d. Identify and handle irrelevance*
> *e. See the structure of an argument*
> *f. Summarize*

3. Ask and answer questions of clarification and/or challenge, such as,

> *a. Why?*
> *b. What is your main point?*
> *c. What do you mean by...?*
> *d. What would be an example?*
> *e. What would not be an example (though close to being one)?*
> *f. How does that apply to this case (describe a case, which might well appear to be a counter example)?*
> *g. What difference does it make?*
> *h. What are the facts?*
> *i. Is this what you are saying: _____?*
> *j. Would you say some more about that?*

(The next two involve the basis for the decision.)

4. Judge the credibility of a source. Major criteria (but not necessary conditions):

> *a. Expertise*
> *b. Lack of conflict of interest*
> *c. Agreement among sources*
> *d. Reputation*
> *e. Use of established procedures*
> *f. Known risk to reputation*

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2. More and less useful ways to think about critical thinking

> *g. Ability to give reasons*
> *h. Careful habits*

5. Observe, and judge observation reports. Major criteria (but not necessary conditions, except for the first):

> *a. Minimal inferring involved*
> *b. Short time interval between observation and report*
> *c. Report by the observer, rather than someone else (that is, the report is not hearsay)*
> *d. Provision of records.*
> *e. Corroboration*
> *f. Possibility of corroboration*
> *g. Good access*
> *h. Competent employment of technology, if technology is useful*
> *i. Satisfaction by observer (and reporter, if a different person) of the credibility criteria in Ability # 4 above.*

(The next three involve inference.)

6. Deduce, and judge deduction

> *a. Class logic*
> *b. Conditional logic*
> *c. Interpretation of logical terminology in statements, including*
> *(1) Negation and double negation*
> *(2) Necessary and sufficient condition language*
> *(3) Such words as "only", "if and only if", "or", "some", "unless", "not both".*

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2. More and less useful ways to think about critical thinking

7. Induce, and judge induction

a. To generalizations. Broad considerations:
(1) Typicality of data, including sampling where appropriate
(2) Breadth of coverage
(3) Acceptability of evidence
b. To explanatory conclusions (including hypotheses)
(1) Major types of explanatory conclusions and hypotheses:
(a) Causal claims
(b) Claims about the beliefs and attitudes of people
(c) Interpretation of authors' intended meanings
(d) Historical claims that certain things happened (including criminal accusations)
(e) Reported definitions
(f) Claims that some proposition is an unstated reason that the person actually used
(2) Characteristic investigative activities
(a) Designing experiments, including planning to control variables
(b) Seeking evidence and counter-evidence
(c) Seeking other possible explanations
(3) Criteria, the first five being essential, the sixth being desirable
(a) The proposed conclusion would explain the evidence
(b) The proposed conclusion is consistent with all known facts
(c) Competitive alternative explanations are inconsistent with facts
(d) The evidence on which the hypothesis depends is acceptable.
(e) A legitimate effort should have been made to uncover counter-evidence
(f) The proposed conclusion seems plausible

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2. More and less useful ways to think about critical thinking

8. Make and judge value judgments: Important factors:

> *a. Background facts*
> *b. Consequences of accepting or rejecting the judgment*
> *c. Prima facie application of acceptable principles*
> *d. Alternatives*
> *e. Balancing, weighing, deciding*

(The next two abilities involve advanced clarification.)

9. Define terms and judge definitions. Three dimensions are form, strategy, and content.

> *a. Form. Some useful forms are:*
> *(1) Synonym*
> *(2) Classification*
> *(3) Range*
> *(4) Equivalent expression*
> *(5) Operational*
> *(6) Example and non-example*
> *b. Definitional strategy*
> *(1) Acts*
> *(a) Report a meaning*
> *(b) Stipulate a meaning*
> *(c) Express a position on an issue (including "programmatic" and "persuasive" definitions)*
> *(2) Identifying and handling equivocation*
> *c. Content of the definition*

10. Attribute unstated assumptions (an ability that belongs under both clarification and, in a way, inference)

> *(The next two abilities involve supposition and integration.)*

11. Consider and reason from premises, reasons, assumptions, positions, and other propositions with which they disagree or about which they are in doubt -- without letting the disagreement or doubt interfere with their thinking ("suppositional thinking")

12. Integrate the other abilities and dispositions in making and defending a decision

> *(The first twelve abilities are constitutive abilities. The next three are auxiliary critical thinking abilities: Having them, though very helpful in various ways, is not constitutive of being a critical thinker.)*

13. Proceed in an orderly manner appropriate to the situation. For example:

> *a. Follow problem solving steps*
> *b. Monitor one's own thinking (that is, engage in metacognition)*
> *c. Employ a reasonable critical thinking checklist*

14. Be sensitive to the feelings, level of knowledge, and degree of sophistication of others

15. Employ appropriate rhetorical strategies in discussion and presentation (orally and in writing), including employing and reacting to "fallacy" labels in an appropriate manner.

> *Examples of fallacy labels are "circularity," "bandwagon," "post hoc," "equivocation," "non sequitur," and "straw person."*

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2. More and less useful ways to think about critical thinking

- Some offer higher-level definitions

"We understand critical thinking to be purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which that judgment is based…

The ideal critical thinker is habitually inquisitive, well-informed, trustful of reason, open-minded, flexible, fair-minded in evaluation, honest in facing personal biases, prudent in making judgments, willing to reconsider, clear about issues, orderly in complex matters, diligent in seeking relevant information, reasonable in the selection of criteria, focused in inquiry, and persistent in seeking results which are as precise as the subject and the circumstances of inquiry permit" (Facione, 1990, p. 3).

2. More and less useful ways to think about critical thinking

Scriven and Paul (2003): “Critical thinking is the intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action.”

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2. More and less useful ways to think about critical thinking

Facione (1990): “We understand critical thinking to be purposeful, self-regulatory judgment…”

Scriven & Paul (1987): “self-guided, self-disciplined thinking”

Paul & Elder (2013): “self-directed, self-disciplined, self-monitored, and self-corrective thinking”.

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2. More and less useful ways to think about critical thinking

- Partial characterizations may be helpful
  - Critical thinking is reasoning competently, reliably, and open-mindedly to reach accurate conclusions and make sound decisions in many different contexts.
  - **It is the domain-general application of fairly basic competencies, not the domain-specific application of expertise.**

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2. More and less useful ways to think about critical thinking

- The domain-general application of fairly basic competencies, not the domain-specific application of expertise.
  - Using, not having, the competencies.
  - Critical thinking implicates *meta-level* skills, habits, or virtues: using the right knowledge and competencies at the right time, across different domains.

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3. The surprising role of infrastructure, systems, and social skills

- Why is this hard?
  - Learning itself is to a significant extent domain-specific.
  - It is really difficult to self-stimulate corrective measures on distorted reasoning; e.g., “bias blindspot”.

3. The surprising role of infrastructure, systems, and social skills

- Training and cross-domain practice can inculcate habits of checking situations for patterns, for hidden assumptions, for red flags, etc.
- But to frame this as a problem of self-regulation, self-monitoring, self-correction, is to create the hardest version of the problem.

3. The surprising role of infrastructure, systems, and social skills

- Critical thinking is greatly facilitated by:
  - Having reliable people around you to notice and let you know
  - Having infrastructure that draws your attention to it
  - Having processes that make these checks and reviews automatic

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3. The surprising role of infrastructure, systems, and social skills

- So those meta-skills we were talking about? They're the ones that lead to your creating, having, trusting and deferring to:
  - Reliable peers
  - Reasoning and decision-making infrastructure
  - Reasoning and decision-making processes

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3. The surprising role of infrastructure, systems, and social skills

- Peer relations, infrastructure, and processes are social achievements and shared collaborative endeavours.

- Trust and deference require social and emotional maturity and virtue.

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4. What does it look like in practice to take these elements seriously?

- Providing infrastructure that critical thinking presupposes. If CT in your organization requires
  - certain kinds of collaboration… how does the physical architecture put people in proximity?
  - informed colleagues… what information sources and opportunities have you offered?
  - learning from error… how are you teaching and encouraging intellectual humility?

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4. What does it look like in practice to take these elements seriously?

- Teaching, learning and facilitating for social critical thinking skills.
  - Modeling debate to win vs “You were right, I was wrong”
  - Valorizing contributing and accepting constructive epistemic improvements

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4. What does it look like in practice to take these elements seriously?

- Reward correction instead of punishing error
  - Don’t incentivize hiding mistakes
  - Confessional style can model learning from mistakes
    - Requires atmosphere of trust; weaponizing admissions of error is kryptonite to critical thinking and sound decision-making in organizations

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4. What does it look like in practice to take these elements seriously?

- Creating and supporting decision-making processes that select for debiased, accurate reasoning
  - Training in using the social infrastructure of an organization – esp. committees
  - Modeling deference to process
  - Evidence-based decision-making as a process, not a credential or one-time achievement

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Takeaways

1. Nobody owns the phrase “critical thinking” – there are a lot of different uses out there, not all of them very clear or helpful.
2. Critical thinking involves every aspect of thinking, but isn’t very usefully characterized in those terms.

Takeaways

3. The flexibility and generality of critical thinking implies that some of its key enabling factors are social, environmental, and emotional.
4. Critical thinking is broadly collaborative; in organizations it is enhanced through designed physical, informational, and social infrastructure.

A final thought: a culture of understanding the cooperative nature of critical thinking

- Sometimes critical thinking requires standing apart from the popular or received opinion.
- Merely standing apart from the popular or received opinion is not a manifestation of critical thinking.

- Sometimes critical thinking requires saying what someone else will find difficult to hear.
- Merely saying what someone else will find difficult to hear is not a manifestation of critical thinking.

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A final thought: a culture of understanding the cooperative nature of critical thinking

- Few things are more commonly justified under the flag of critical thinking than being a jerk.

- Don’t be a jerk.

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