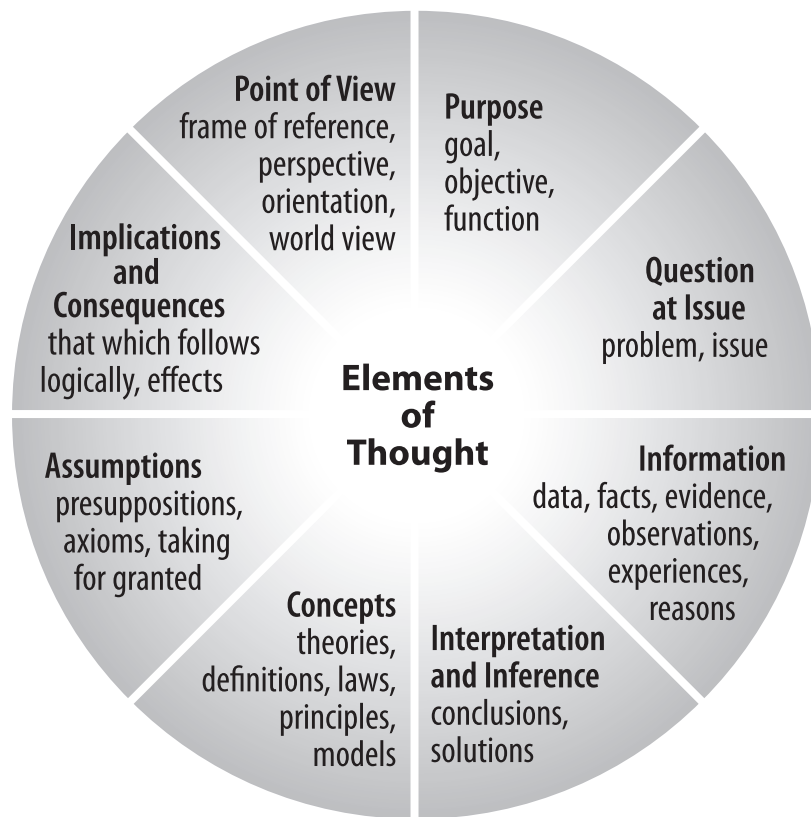


## **Diagrams Helpful for Understanding Critical Thinking and Its Relationship with Teaching and Learning**

**This section entails diagrams which can help you:**

1. make connections between the critical thinking concepts discussed in this book,
2. better understand the relationship between critical thinking and teaching and learning, and
3. see the relevance of critical thinking to all subjects, disciplines and domains of human life.

## The Elements of Thought

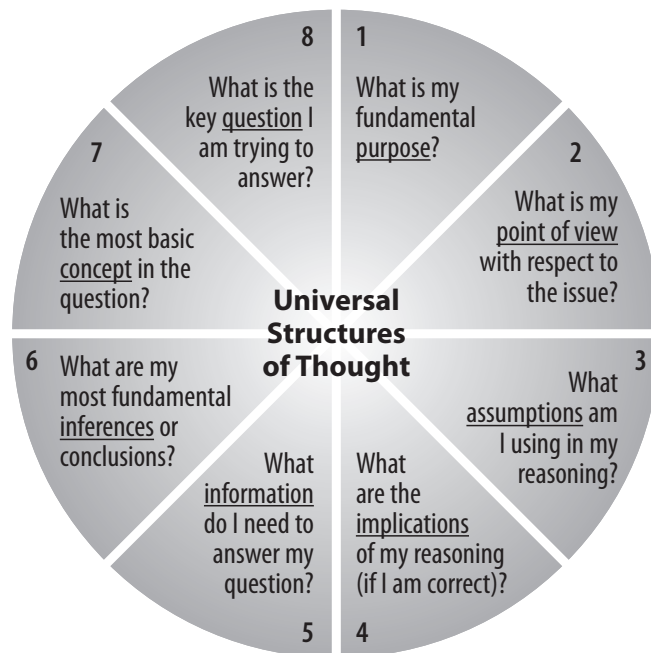
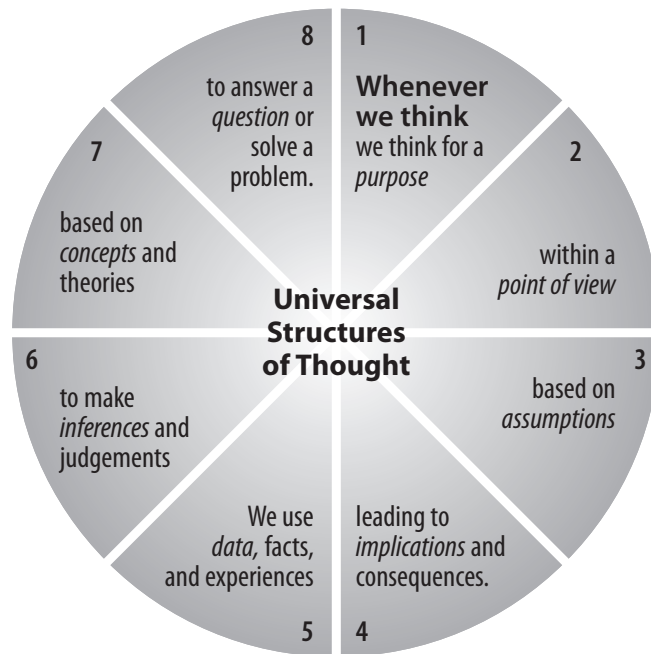


### Used With Sensitivity to Universal Intellectual Standards

Clarity → Accuracy → Depth → Breadth → Significance  
Precision  
Relevance

*Taken from "The Thinker's Guide to Critical Thinking Concepts and Tools", page 3*

## To Analyze Thinking We Must Identify and Question its Elemental Structures



Taken from "The Thinker's Guide to Analytic Thinking", page 7

## Questions for Socratic Dialogue

### Questions of Clarification

- What do you mean by \_\_\_\_?
- What is your main point?
- How does \_\_\_\_ relate to \_\_\_\_?
- Could you put that another way?
- What do you think is the main issue here?
- Is your basic point \_\_\_\_ or \_\_\_\_?
- Could you give me an example?
- Would this be an example: \_\_\_\_?
- Could you explain that further?
- Would you say more about that?
- Why do you say that?
- Let me see if I understand you; do you mean \_\_\_\_ or \_\_\_\_?
- How does this relate to our discussion/problem/issue?
- What do you think John meant by his remark? What did you take John to mean?
- Jane, would you summarize in your own words what Richard has said? Richard, is that what you meant?

### Questions that Probe Purpose

- What is the purpose of \_\_\_\_?
- What was your purpose when you said \_\_\_\_?
- How do the purposes of these two people vary?
- How do the purposes of these two groups vary?
- What is the purpose of the main character in this story?
- How did the purpose of this character change during the story?
- Was this purpose justifiable?
- What is the purpose of addressing this question at this time?

### Questions that Probe Assumptions

- What are you assuming?
- What is Karen assuming?
- What could we assume instead?
- You seem to be assuming \_\_\_\_\_. Do I understand you correctly?
- All of your reasoning depends on the idea that \_\_\_\_\_. Why have you based your reasoning on \_\_\_\_ rather than \_\_\_\_?
- You seem to be assuming \_\_\_\_\_. How would you justify taking this for granted?
- Is it always the case? Why do you think the assumption holds here?

### Questions that Probe Information, Reasons, Evidence, and Causes

- What would be an example?
- How do you know?
- What are your reasons for saying that?
- Why did you say that?
- What other information do we need to know before we can address this question?
- Why do you think that is true?
- Could you explain your reasons to us?
- What led you to that belief?
- Is this good evidence for believing that?
- Do you have any evidence to support your assertion?
- Are those reasons adequate?
- How does that information apply to this case?
- Is there reason to doubt that evidence?
- What difference does that make?
- Who is in a position to know if that is the case?
- What would convince you otherwise?
- What would you say to someone who said \_\_\_\_?
- What accounts for \_\_\_\_?
- What do you think is the cause?
- How did this come about?
- By what reasoning did you come to that conclusion?
- How could we go about finding out whether that is true?
- Can someone else give evidence to support that response?

*Continued on page 287*

*Taken from "The Thinker's Guide to The Art of Socratic Questioning", pages 20-23*

## Questions for Socratic Dialogue, cont.

### Questions About Viewpoints or Perspectives

- You seem to be approaching this issue from \_\_\_\_ perspective. Why have you chosen this rather than that perspective?
- How would other groups/types of people respond? Why? What would influence them?
- How could you answer the objection that \_\_\_\_ would make?
- Can/did anyone see this another way?
- What would someone who disagrees say?
- What is an alternative?
- How are Ken's and Roxanne's ideas alike? Different?

### Questions that Probe Implications and Consequences

- What are you implying by that?
- When you say \_\_\_\_, are you implying \_\_\_\_?
- But if that happened, what else would also happen as a result? Why?
- What effect would that have?
- Would that necessarily happen or only probably happen?
- What is an alternative?
- If this and this are the case, then what else must be true?

### Questions About the Question

- How can we find out?
- Is this the same issue as \_\_\_\_?
- How could someone settle this question?
- Can we break this question down at all?
- Is the question clear? Do we understand it?
- How would \_\_\_\_ put the issue?
- Is this question easy or difficult to answer? Why?
- What does this question assume?
- Would \_\_\_\_ put the question differently?
- Why is this question important?
- Does this question ask us to evaluate something?
- Do we need facts to answer this?

- Do we all agree that this is the question?
- To answer this question, what other questions would we have to answer first?
- I'm not sure I understand how you are interpreting the main question at issue.

### Questions that Probe Concepts

- What is the main idea we are dealing with?
- Why/how is this idea important?
- Do these two ideas conflict? If so, how?
- What was the main idea guiding the thinking of the character in this story?
- How is this idea guiding our thinking as we try to reason through this issue? Is this idea causing us problems?
- What main theories do we need to consider in figuring out \_\_\_\_?
- Are you using this term "\_\_\_\_" in keeping with educated usage?
- What main distinctions should we draw in reasoning through this problem?
- What idea is this author using in her or his thinking? Is there a problem with it?

### Questions that Probe Inferences and Interpretations

- What conclusions are we coming to about \_\_\_\_?
- On what information are we basing this conclusion?
- Is there a more logical inference we might make in this situation?
- How are you interpreting her behavior? Is there another possible interpretation?
- What do you think of \_\_\_\_?
- How did you reach that conclusion?
- Given all the facts, what is the best possible conclusion?
- How shall we interpret these data?

## To Evaluate Thinking We Must Apply Intellectual Standards to the Elements of Thought

### Clarity

**Understandable, the meaning can be grasped**

Could you elaborate further? Could you give me an example? Could you illustrate what you mean?

### Accuracy

**Free from errors or distortions, true**

How could we check on that? How could we find out if that is true? How could we verify or test that?

### Precision

**Exact to the necessary level of detail**

Could you be more specific? Could you give me more details? Could you be more exact?

### Relevance

**Relating to the matter at hand**

How does that relate to the problem? How does that bear on the question? How does that help us with the issue?

### Depth

**Containing complexities and multiple interrelationships**

What factors make this a difficult problem? What are some of the complexities of this question? What are some of the difficulties we need to deal with?

### Breadth

**Encompassing multiple viewpoints**

Do we need to look at this from another perspective? Do we need to consider another point of view? Do we need to look at this in other ways?

### Logic

**The parts make sense together, no contradictions**

Does all this make sense together? Does your first paragraph fit in with your last? Does what you say follow from the evidence?

### Significance

**Focusing on the important, not trivial**

Is this the most important problem to consider? Is this the central idea to focus on? Which of these facts are most important?

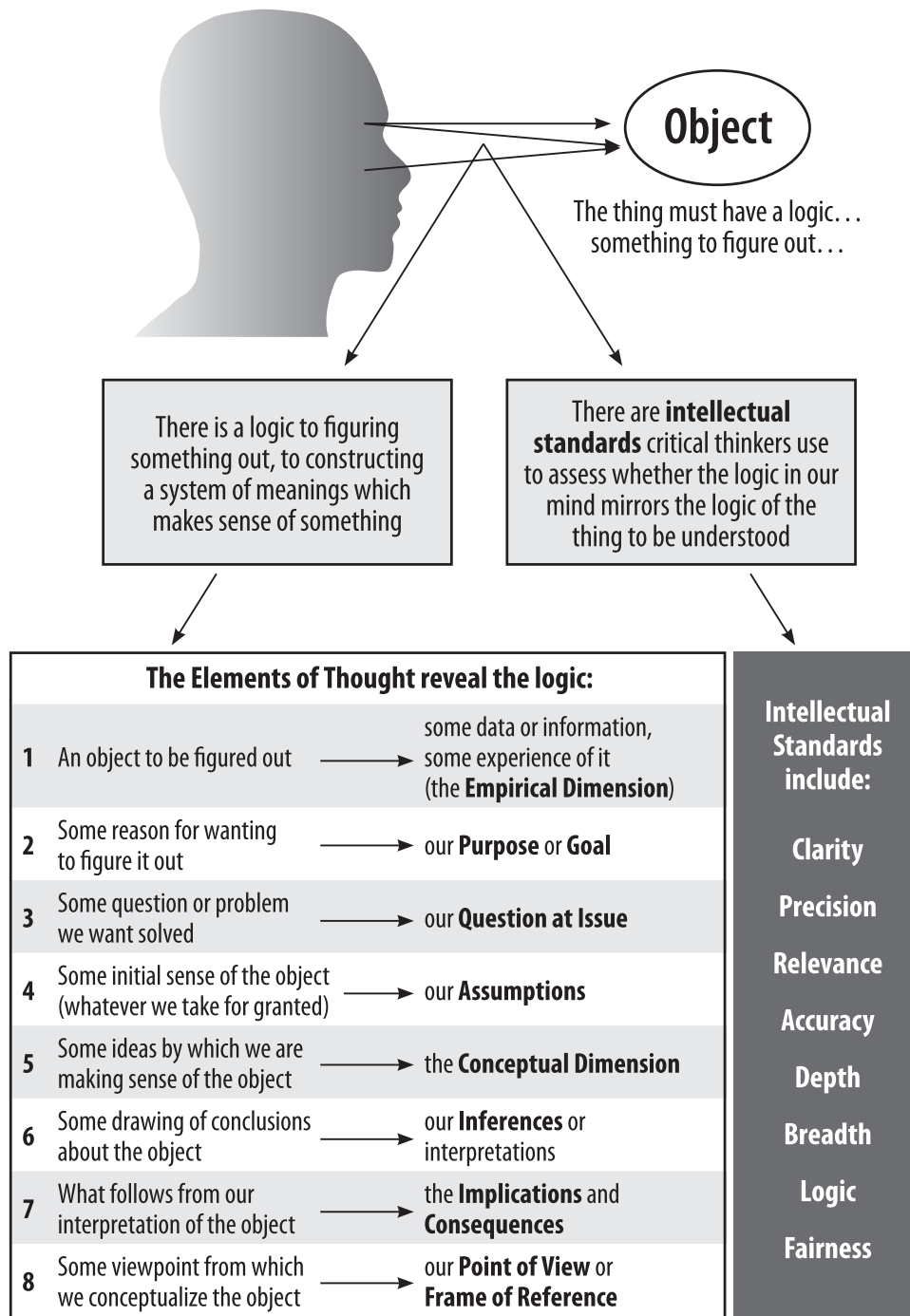
### Fairness

**Justifiable, not self-serving or one-sided**

Do I have any vested interest in this issue? Am I sympathetically representing the viewpoints of others?

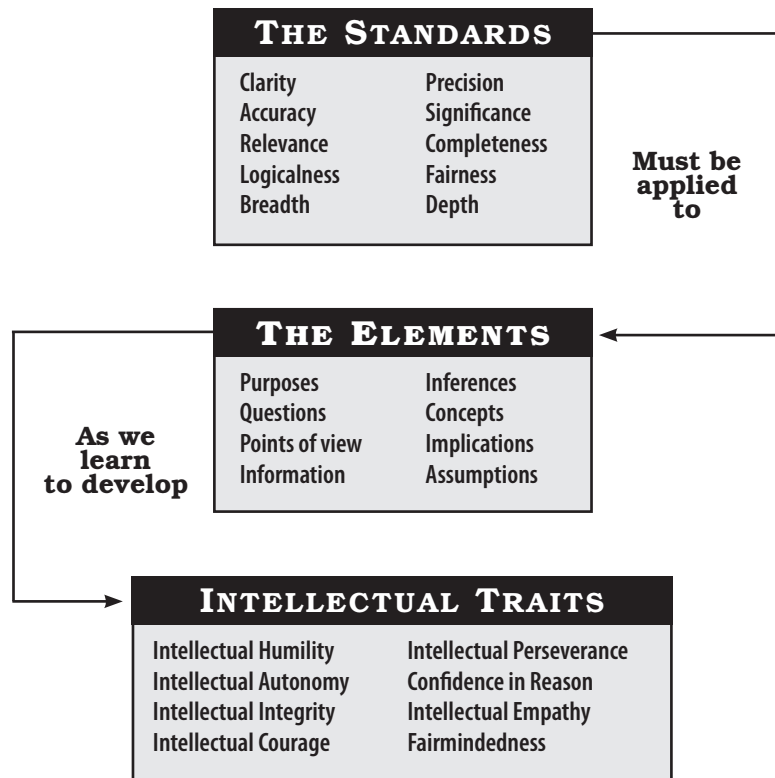
*Taken from "The Thinker's Guide to Analytic Thinking", pages 8-9*

## The Figuring Mind



Taken from "The Thinker's Guide to Analytic Thinking", page 22

## Critical Thinkers Routinely Apply the Intellectual Standards to the Elements of Reasoning



Taken from "The Miniature Guide to Critical Thinking Concepts and Tools", page 19



## Essential Intellectual Traits

### **Intellectual Humility ..... vs Intellectual Arrogance**

Having a consciousness of the limits of one's knowledge, including a sensitivity to circumstances in which one's native egocentrism is likely to function self-deceptively; sensitivity to bias, prejudice and limitations of one's viewpoint. Intellectual humility depends on recognizing that one should not claim more than one actually knows. It does not imply spinelessness or submissiveness. It implies the lack of intellectual pretentiousness, boastfulness, or conceit, combined with insight into the logical foundations, or lack of such foundations, of one's beliefs.

### **Intellectual Courage ..... vs Intellectual Cowardice**

Having a consciousness of the need to face and fairly address ideas, beliefs or viewpoints toward which we have strong negative emotions and to which we have not given a serious hearing. This courage is connected with the recognition that ideas considered dangerous or absurd are sometimes rationally justified (in whole or in part) and that conclusions and beliefs inculcated in us are sometimes false or misleading. To determine for ourselves which is which, we must not passively and uncritically "accept" what we have "learned." Intellectual courage comes into play here, because inevitably we will come to see some truth in some ideas considered dangerous and absurd, and distortion or falsity in some ideas strongly held in our social group. We need courage to be true to our own thinking in such circumstances. The penalties for nonconformity can be severe.

### **Intellectual Empathy ..... vs Intellectual Narrow-mindedness**

Having a consciousness of the need to imaginatively put oneself in the place of others in order to genuinely understand them, which requires the consciousness of our egocentric tendency to identify truth with our immediate perceptions of long-standing thought or belief. This trait correlates with the ability to reconstruct accurately the viewpoints and reasoning of others and to reason from premises, assumptions, and ideas other than our own. This trait also correlates with the willingness to remember occasions when we were wrong in the past despite an intense conviction that we were right, and with the ability to imagine our being similarly deceived in a case-at-hand.

### **Intellectual Autonomy ..... vs Intellectual Conformity**

Having rational control of one's beliefs, values, and inferences. The ideal of critical thinking is to learn to think for oneself, to gain command over one's thought processes. It entails a commitment to analyzing and evaluating beliefs on the basis of reason and evidence, to question when it is rational to question, to believe when it is rational to believe, and to conform when it is rational to conform.

### **Intellectual Integrity ..... vs Intellectual Hypocrisy**

Recognition of the need to be true to one's own thinking; to be consistent in the intellectual standards one applies; to hold one's self to the same rigorous standards of evidence and proof to which one holds one's antagonists; to practice what one advocates for others; and to honestly admit discrepancies and inconsistencies in one's own thought and action.

*Continued on page 292*

*Taken from "The Miniature Guide to Critical Thinking Concepts and Tools", pages 14-15*

## Essential Intellectual Traits, cont.

**Intellectual Perseverance..... vs Intellectual Laziness**

Having a consciousness of the need to use intellectual insights and truths in spite of difficulties, obstacles, and frustrations; firm adherence to rational principles despite the irrational opposition of others; a sense of the need to struggle with confusion and unsettled questions over an extended period of time to achieve deeper understanding or insight.

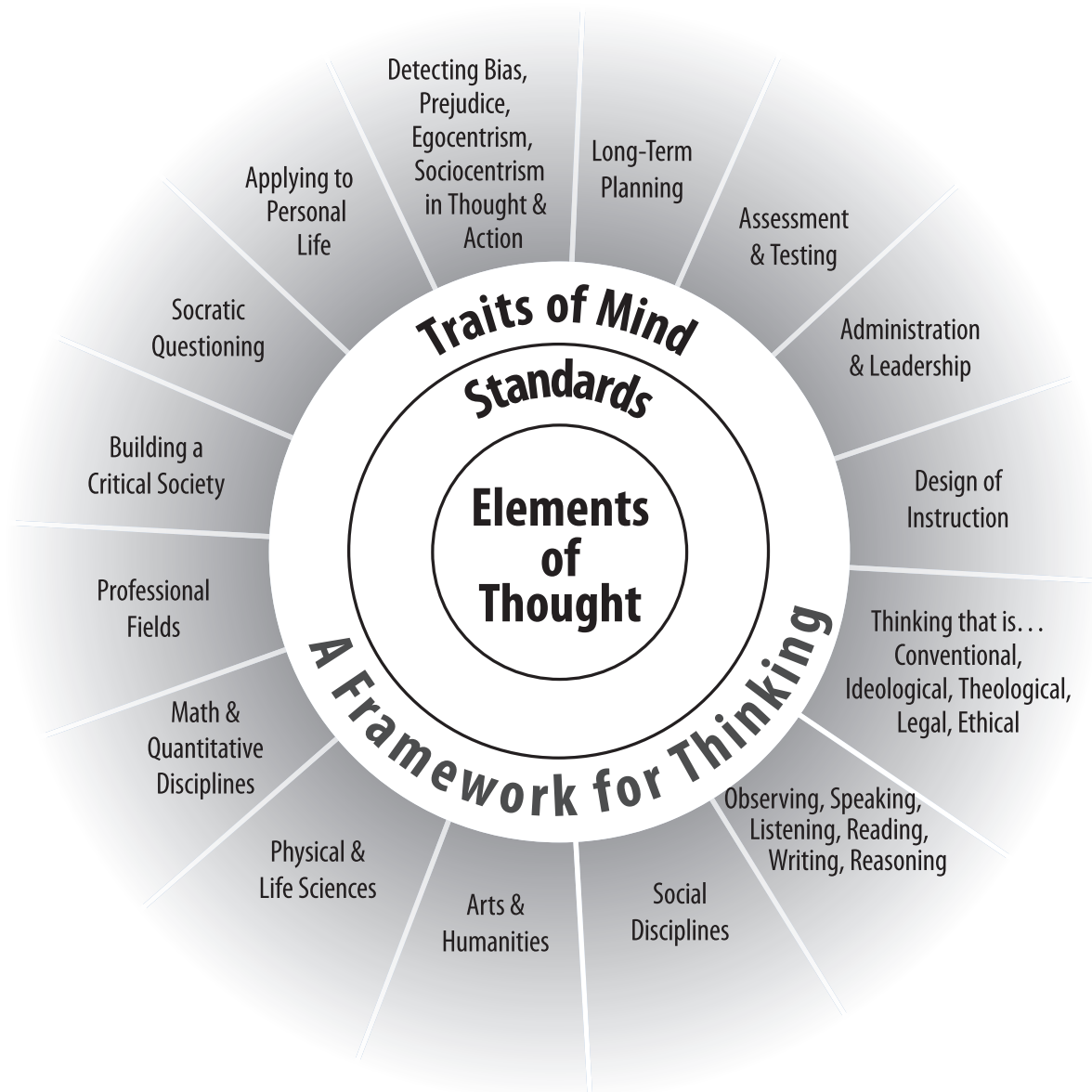
**Confidence In Reason ..... vs Distrust of Reason and Evidence**

Confidence that, in the long run, one's own higher interests and those of humankind at large will be best served by giving the freest play to reason, by encouraging people to come to their own conclusions by developing their own rational faculties; faith that, with proper encouragement and cultivation, people can learn to think for themselves, to form rational viewpoints, draw reasonable conclusions, think coherently and logically, persuade each other by reason and become reasonable persons, despite the deep-seated obstacles in the native character of the human mind and in society as we know it.

**Fairmindedness ..... vs Intellectual Unfairness**

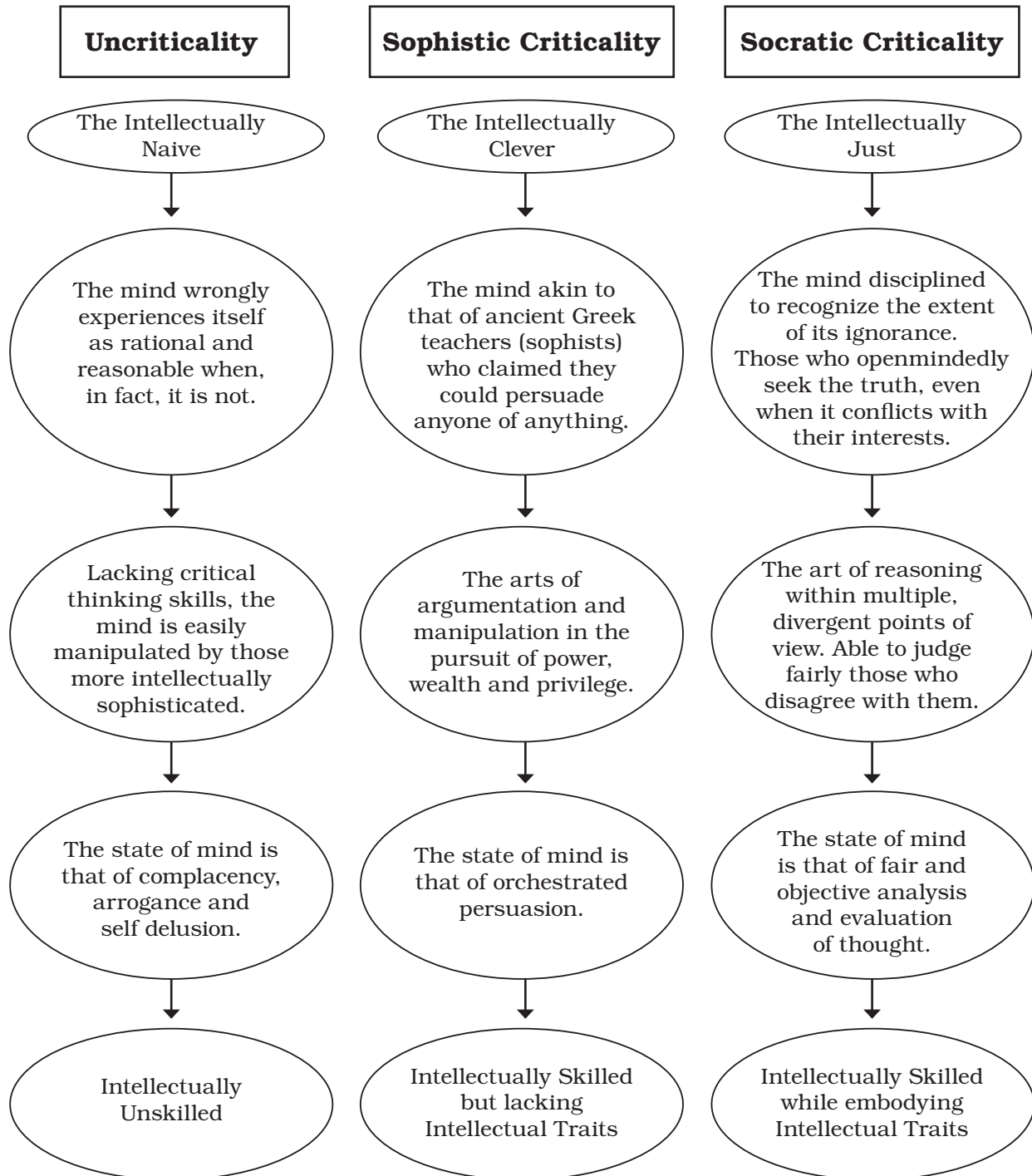
Having a consciousness of the need to treat all viewpoints alike, without reference to one's own feelings or vested interests, or the feelings or vested interests of one's friends, community or nation; implies adherence to intellectual standards without reference to one's own advantage or the advantage of one's group.

## **Critical Thinking is Manifested in ALL Forms of Thought**



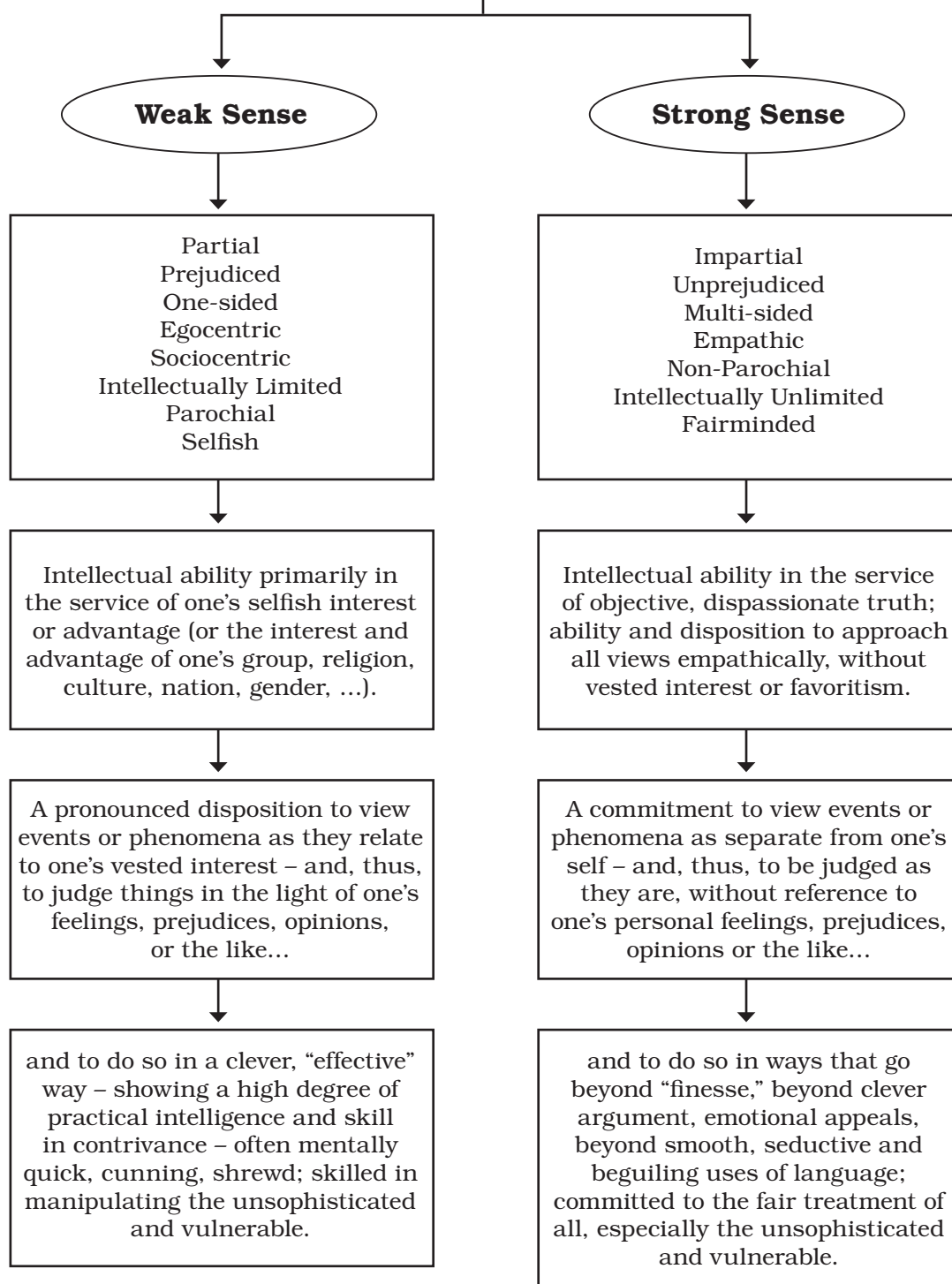
### **Forms of Thought as Relevant to Critical Thinking Across the Disciplines**

## Three Forms of Criticality



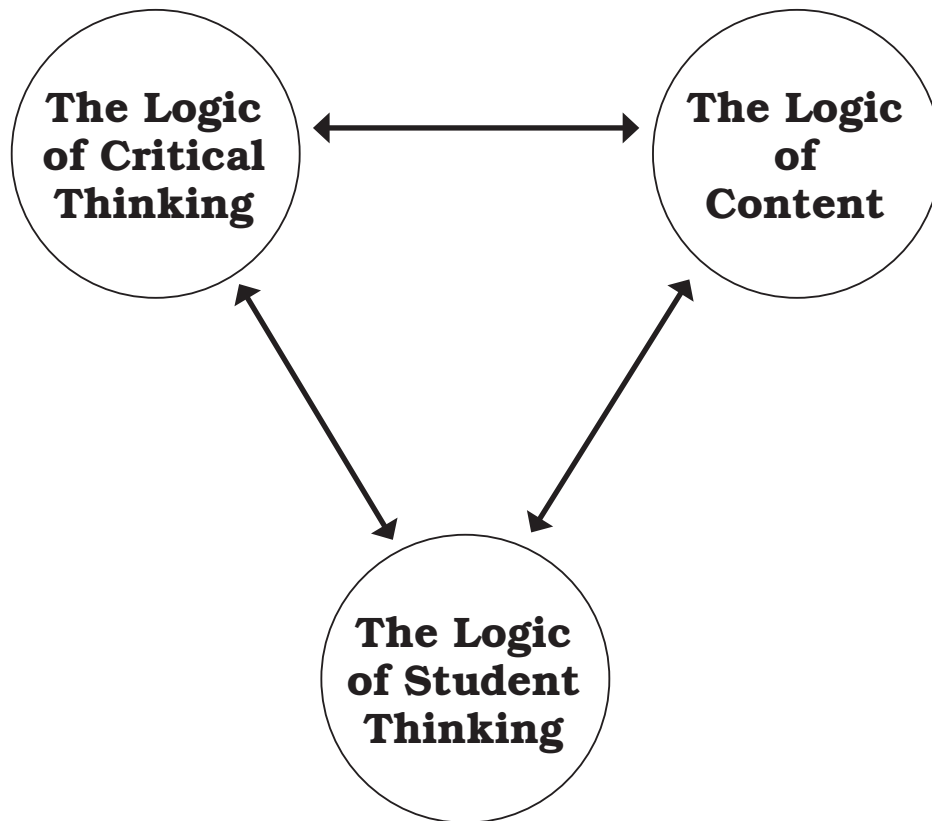
## Strong and Weak Sense

### Critical Thinking



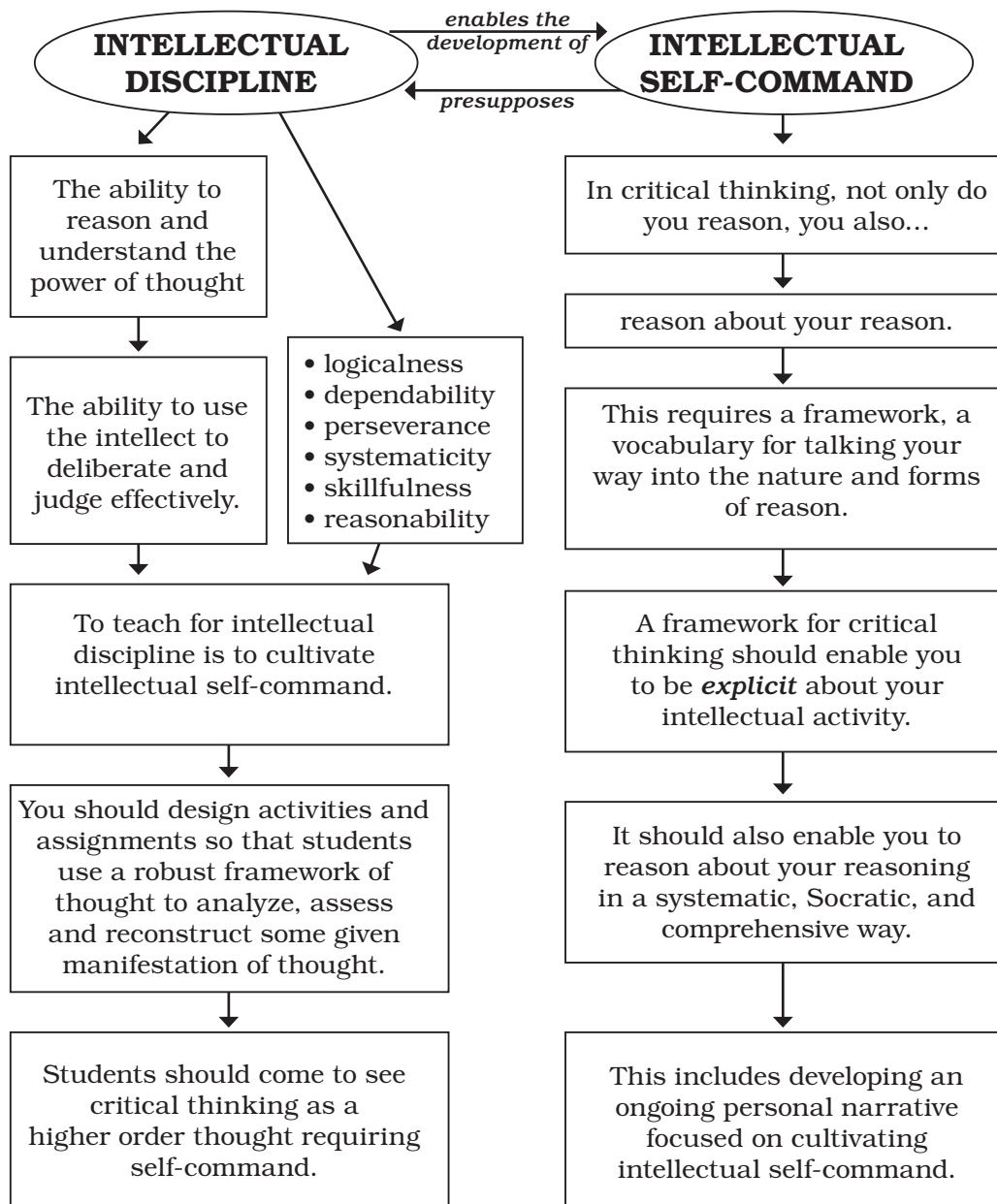
## **Critical Thinking, Content, and Student Thinking**

**Each Has Its Own Logic: Each Must Interconnect**



## Intellectual Discipline

### Requires and Presupposes Intellectual Self-Command Can Be Fostered in Teaching and Learning



*We can never become fairminded unless we learn how to enter sympathetically into the thinking of others, to reason from their perspective and eventually to try seeing things as they see them.*