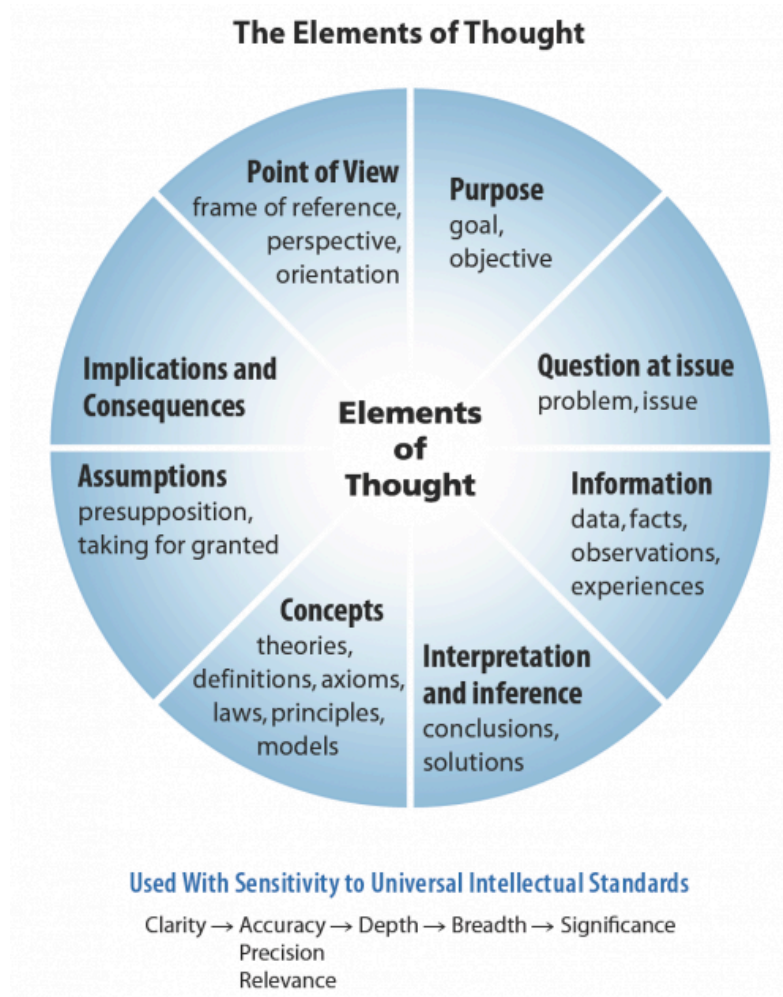# Eight Elements of Thought

The **Eight Elements of Thought** is a framework for critically examining an opinion, argument or analysis [1]. The Eight Elements of Thought are as follows:

- Purpose
- Question at Issue
- Point of View
- Assumptions
- Evidence and Information
- Concepts
- Interpretation and Inference
- Implications and Consequences

The following graphic excerpted from the *Miniature Guide to Critical Thinking Concepts and Tools* [2] illustrates the Eight Elements of Thought. The ability to apply each of the eight elements is enhanced by subscribing to each of the nine Intellectual Standards.

The Elements of Thought

Point of View
frame of reference, perspective, orientation

Purpose
goal, objective

Implications and Consequences

Elements of Thought

Question at issue
problem, issue

Assumptions
presupposition, taking for granted

Information
data, facts, observations, experiences

Concepts
theories, definitions, axioms, laws, principles, models

Interpretation and inference
conclusions, solutions

Used With Sensitivity to Universal Intellectual Standards

Clarity → Accuracy → Depth → Breadth → Significance
Precision
Relevance

When to Use

Use the Eight Elements of Thought to dissect an analysis, argument, opinion, etc. into its basic parts in order to understand its full details. This technique is particularly suited for analytic peer-reviewing.

Value Added

- The Eight Elements of Thought provides a framework for critically examining the substance underlying an analysis or argument. This is particularly helpful in uncovering hidden bias in a risk analysis, flaws in analytical reasoning and understanding how an analyst came to his conclusions.

- For the author of an analysis, the Eight Elements of Thought provides a framework for critically examining one's own work, to include weaknesses in the analysis, to suggest alternative points of view (e.g., alternative hypotheses, decision options), evaluate the significance of assumptions, and so on. The Eight Elements helps analysts appraise and improve the quality of their work. This is particularly important for benefit-cost analyses used to inform investment decisions.

- The Eight Elements of Thought can be used to augment any process used to rigorously evaluate the quality of human testimony and expert opinion.

Cautions of Use

- The Eight Elements of Thought is not a foolproof method for eliminating biases or appraising the quality of an analytical product. The human analyst is still ultimately responsible for correctly identifying the eight elements of thought within the work, and analyzing them.

The Method

The following method based on the Eight Elements of Thought consists of three steps as follows:

1. Carefully read an analysis, argument or opinion of interest
2. Systematically dissect the analysis with respect to each element of thought
3. Formulate an opinion on the quality of the analysis

For a more detailed discussion of the eight elements of thought in the context of risk analysis, refer to Chapter 4 of the recent textbook by Thomas L. Norman [3].

Step 1: Carefully read an analysis, argument or opinion of interest

While reading an analysis, argument or opinion of interest, pay attention to the author's message and manner in which he makes his case or point. Do not dwell on the details; rather, write down on a piece of paper any thoughts or observations and move on.

Step 2: Systematically dissect the analysis with respect to each element of thought

The following provides definitions and questions to think about for each of the eight elements of thought.

Purpose
The purpose is the goal or objective of the analysis. It describes what the analysis is trying to accomplish. All analysis has a purpose.

- What is the author's purpose for speaking on this topic?
- What is the purpose for doing...?
- What does the author hope to achieve?
- What does the author want the listener or reader to do?
- What is the central aim in this line of thought?
- For whom is this analysis targeted?

Question at Issue
The question at issue defines the question or questions that analysis is seeking to answer. Within a risk analysis, the question at issue is equivalent to the key risk question.

- What is the issue being discussed or problem that the author believes needs to be addressed?
- What are the important questions embedded in the issue?
- Is the question simple or complex?
- If complex, can the question be broken down into a series of simpler questions?
- What does the author need to provide in order to settle or answer this question?

> **Note:** Techniques such as Problem Restatement and Issue Development can help to settle on the most appropriate and significant question at issue or define the question at issue that most closely captures the author's intent.

Point of View
The point of view describes the author's frame of references, perspective or orientation. Typically, there is at least one additional point of view that competes with that of the author.

- What is the author's frame of reference, perspective or orientation?
- What are some alternative points of view?
- Does the author consider these alternative points of view?
- If so, how does the author treat them?

Assumptions

An assumption here is a belief unsupported by fact, yet necessary to move forward in the analysis. All reasoning is based on assumptions.

- Does the author make any assumptions?
- How does the author use these assumptions?
- How do these assumptions shape the author's point of view and vice versa?
- What ideas does the author take for granted without provided supporting evidence?
- How could these assumptions shape an alternative point of view held by different stakeholders?
- What impact would false assumptions have on the analysis?

"An assumption left untended is a risk." - Col. Jake Graham (USMC ret.)

Evidence and Information

All reasoning must be based upon data, evidence and information in order to be considered credible. Such evidence and information may be tangible or derived from human testimony.

- Does the author present any data, facts, information or evidence to support his conclusions?
- What relevant information is needed to answer the questions at issue?
- What information is lacking? Is more information needed?
- From what sources can/were data, evidence and information are obtained?
- What form does this information take?
- Has the author properly evaluated the quality of his information?

Concepts

Concepts are ideas, theories, definitions, axioms, laws, principles, etc. used to make sense of data, evidence and information.

- What concepts or principles or laws are essential for understanding the author's argument?
- What concepts does the author assume his audience understands?
- To what extent does the target audience appreciate or is aware of these concepts?

Interpretation and Inference

Inferences are interpretations or conclusion that result from our processing of information. Information interacts with concepts and assumptions to form interpretations and conclusions.

- How does the author reason from information to conclusions (point of view)?
- How does the author interpret his information?
- To what extent does the author rely on assumption to make his argument?
- Do the conclusions follow from the data, evidence and information?
- What recommendations does the author make?
- Do these recommendations follow from the conclusions? Are they consonant?
- Do the inferences adhere to valid logical forms?

> **Note:** one should infer no more and no less than what is warranted by the available data, evidence and information. In some cases, this means that the answer to the question at issue will be shrouded in significant uncertainty, particularly if evidence is sparse or contradictory.

Implications and Consequences

Implications are claims or truths that logically follow from other claims or tries (e.g., x *implies* y). Consequences follow from actions (e.g., y occurs because you did x).

- If we decide to accept the author's conclusions or recommendations, what things might happen?
- If we decide to NOT accept the author's conclusions or recommendations, what things might happen?
- How significant are the implications of this conclusion or recommendation?

Step 3: Formulate an opinion on the quality of the analysis

The manner in which this phase is carried out depends on who authored the analysis, argument or opinion.

- If the analysis, argument or opinion is the work of someone else, use the insight developed from applying Eight Elements of Thought to rate the quality of the work. The assessed quality is equivalent to assigning a trust level to the analysis, where "high quality" means the work is well thought out and can be trusted and "low quality" means the work is poor (e.g., heavily biased, weak argument, poor information) and should not be given much weight.

- If the analysis, argument or opinion is your own, use the results from applying the Eight Elements of Thought to improve on the quality of the work.

See Also

- [Intellectual Standards](#)
- [ODNI Analytic Standards](#)

References

1. The Critical Thinking Community. n.d. Web. 2 June 2011.
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