

OUTLINE OF THE LOGIC OF SCIENCE

Exemplifying The Structural Elements Of “Critical Thinking” Inc.

Modified from A Miniature Guide
To the Foundations of Analytical Thinking
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Second Edition 2005
Published By
The Foundation for Critical Thinking
Dillon Beach, California

Every field of inquiry has its domain (subject matter), a body of knowledge, its methods, and its techniques. Methods are principles of inquiry. This outline is an introduction to the basic structural elements of critical thinking as a general method for inquiry. The example outlined is that of science.

I. Question/Problem

Ask questions about the relative value of alternative (multiple) working hypotheses aimed at solving a problem or puzzle.

Ask questions that are answerable using a theoretical framework informed by systematic observation and experiment.

II. Ultimate Goal/Purpose

Knowledge for the wonder of it.

Satisfaction of one's curiosity within the guidelines of ethical responsibility.

III. Point of View

The world seen as a natural system.

Looking at the world as something we can know and understand by successive approximations.

IV. Basic Conceptual Devices

A. Assumptions

E.g., pattern and regularities reveal structure and function.

B. Concepts

E.g., the world as a natural system can be usefully conceptualized as having physical (abiotic) and living (biotic) components and processes.

V. Information/Results/Evidence/Examples

Search for pattern, regularity, and surprises, with the discerning eye of a sherlock.

VI. Inference/Interpretation

Evaluate hypotheses and construct models with the new information from the Results and Evidence

Also consider new theoretical work that has become available.

VII. Implications and Consequences

Trace out and project the likely positive and negative implications and consequences of the act of inquiry and knowledge that has been gained.

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