

# Chapter 4

## Inquiry Systems

### ABSTRACT

*This tool is concerned with the different kinds of knowledge that are best suited for different kinds of problems. (1) Expert agreement—something is objective if and only if it's based on “hard Data, facts, or observations” and the “tight agreement” between different observers as to the data, etc. (2) True formula—something is objective if, and only if, it's based on logical reasoning from self-evident first principles or premises. (3) Multiple perspectives—something is objective if and only if it's the product and the result of multiple points of view. (4) Expert disagreement—something is objective if and only if it's the product and the result of (that is, it survives) the most intense debate between the most disparate points of view. And finally, (5) Systems thinking—something is objective if and only if it's the product and the result of the most intense effort of sweeping in knowledge from the arts, humanities, professions, philosophy, sciences, etc.*

*“The right question is usually more important than the right answer.” –Plato*

### Learning Objectives

- List the five Inquiry Systems
- Differentiate between Expert Consensus/Empiricism and Analytic Modeling/Rationalism
- Explain the Multiple Models/Kantian Inquiry System
- Identify an example of the Dialectic Inquiry System
- Summarize the Systemic/Pragmatic Inquiry System
- Describe how Inquiry Systems impact Problem Solving

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## INTRODUCTION

Inquiry systems, rooted in philosophy, systems theory, and cognitive science, study the methodologies and processes of gaining knowledge. Major ideas include types of inquiry like deductive, inductive, and abductive reasoning, and systems based on dialogue, consensus, or scientific methods. Key figures like John Dewey, Karl Popper, and C. West Churchman have significantly impacted the field. Recent trends focus on integrating technology, handling complex information, and interdisciplinary approaches. Research from the mid-20th century to now marks the most active period in this academic discourse.

Ian Mitroff has extended these ideas from philosophy and systems theory to organizational behavior and decision-making (Mitroff & Linstone, 1993). Mitroff's work emphasizes the role of human values and ethics in shaping inquiry. He argues for "mixed-scanning approaches" that combine empirical data and subjective interpretation for holistic problem-solving. His contributions have deepened understanding of complex, interrelated systems and have influenced disciplines from management science to public policy.

Mitroff (Mitroff & Linstone, 1993) identifies five types of inquiry systems:

1. **Expert Consensus** aims for single, consensual answers through simple data collection and are often used for straightforward problems. Example applications include:
  - a. **Public Opinion Polls:** Collecting opinions from a sample to gauge public sentiment on an issue.
  - b. **Market Research:** Gathering consumer preferences for new product development.
  - c. **Medical Diagnosis:** Using symptoms to identify a single likely illness.
  - d. **Student Grading:** Using test scores and assignments to determine a final grade.
  - e. **Employee Satisfaction Surveys:** Collecting feedback from employees to identify overall workplace satisfaction.
  - f. **Safety Audits:** Conducting regular checks to collect data on compliance with safety standards, aiming for a single measure of safety levels.
2. **Analytic-Deductive** relies on formal models and algorithms, serving well-defined problems that require precise, quantitative solutions. Example applications include:
  - a. **Financial Forecasting:** Using algorithms to predict stock market trends.
  - b. **Climate Modeling:** Employing complex simulations to predict weather or climate changes.

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