: What are philosophical foundations of DSS practice?

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Decision support systems as a practical discipline has multiple "philosophical foundations". DSS practice has philosophical roots in organization decision-making theory, logical positivism, pragmatism and rationalism. Some developers have brought more than a belief in a technological imperative to their efforts to improve decision-making. The DSS quest to impact and alter human decision behavior suggests both the optimism and goal-orientation of developers. Let's explore briefly philosophical roots that impact building DSS.

Believers in a technology imperative adopt a new technology to support decision making because they perceive adoption and implementation is inevitable. The reasoning is "because we can do something, we must or should do it".

Organizational decision-making theory is anchored in the work of Herbert Simon, who studied the bounded rationality of human decision makers. The philosophical position of organizational decision-making theorists is descriptive rather than normative or prescriptive, but research has identified human limitations that may be overcome with information technologies and DSS.

Logical positivists argue criteria can be used to evaluate the truth of statements. Hence supporting the view that DSS can apply criteria to evaluate decisions and help in analysis. A belief in the value of analytics and analysis is important in much DSS development.

Pragmatism focuses on results. Supposedly intelligent practice results in building effective DSS. The theory of why the system works is not important, rather what is improtant is the results from using the system. DSS have utility in an organization because they are used.

Finally, rationalism advocates using reasoning to reach conclusions. Decisions must be made using human reasoning and deduction. DSS should support human rationality.

Some will argue with these brief characterizations of complex topics, but perhaps they will stimulate more interest in philosophical foundations of DSS practice.

Recall my definition of a decision support system is "an interactive computer-based system or subsystem intended to help decision makers use communications technologies, data, documents, knowledge and/or models to identify and solve problems, complete decision process tasks, and make decisions". Decision Support System is a comfortable "umbrella" term that has some substance. It provides a better descriptor for a "class" of information systems than terms like business intelligence, on-line analytical processing, business analytics, decision-making support systems or management support systems. DSS reminds us that "support" is a philosophically important aspect of the intent of such systems. What we call the software and systems designed to assist decision-makers matters is important in terms of organizing our knowledge and making sense of the world, and also in terms of operationalizing constructs and communicating with others.

To facilitate a more differentiated and systematic categorization of computerized decision support systems, I have identified 5 types of DSS: communications-driven, data-driven, document-driven, knowledge-driven, and model-driven. No taxonomy or typology is perfect and debate and dialectic about types and categories can only help us make some sense of the complex phenomenon associated with information systems that support decision making.

As we explore the organization and meaning of DSS knowledge, we also need to begin to better define classes or categories of information systems. Perhaps we want to categorize systems as Decision Support Systems (DSS), Transaction Processing Systems (TPS), Accounting Information Systems (AIS), Information Delivery and Dissemination Systems, and Computer-based Instructional Information Systems. We need to discuss alternative frameworks that can assist in understanding what we are studying.

Much of our difficulty in exploring "why" we build DSS comes from the many academic disciplines that contribute to the substantive foundation of building Decision Support Systems. For example, database researchers have contributed tools and theories on managing data and documents. Management scientists have developed the solution of mathematical models and provided evidence on the advantages of modeling in problem solving. Some other important technical fields related to decision support include artificial intelligence, human-computer interaction, software engineering, and telecommunications. Cognitive Science, especially Behavioral Decision-Making research, has provided descriptive and empirical information that has assisted in DSS design and has generated hypotheses for decision support research.

In conclusion, we must recognize that the ideas from various schools of philosophy have had and will have an important impact on the design, development and implementation of decision support systems. Some of us have been strongly impacted by Rationalism (Leibnitz), Empiricism (Locke), Criticism (Kant), and Pragmatism (Peirce, James, Dewey, Singer, Churchman). More importantly perhaps, the methods of philosophy can help us understand and conceptualize the systems we create to support decision-making.

Overall, we need to recognize and expand the role ideas play in designing computerized information systems. DSS designers need a basic grounding in philosophy and theory to complement the practical technology perspective that can easily dominate a person's thinking.

References

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Dewey (1910) definition of reflective thought: "Active, persistent, and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it, and the further conclusions to which it tends" (p. 6)

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