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Chapter XI

Methodological Issues in the Evaluation of System Analysis and Design Techniques

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Abstract

This chapter examines methodological issues arising in the comparison of systems analysis and design techniques. An argument is made to establish a foundation of research and more broadly consider the management of scope in analysis and design research. A discussion of why and how we evaluate techniques is provided. A generalized approach combining both deductive and inductive reasoning is presented and a combined grammar-based and cognitive-based approach to comparison is discussed. In addition, concepts from Friedman's economic methodology are applied in the choice between alternative ontologies that underlie grammar-based comparisons. The chapter concludes with a set of nine questions that researchers should consider when designing and developing research in the evaluation of systems analysis and design techniques.

Introduction

In his book *Ontological Foundations of Information Systems*, Weber (1997, p. 30) suggests:

> *The way ahead, I have argued, lies in sustained efforts to develop paradigmatic foundations for the discipline. If we fail to develop such foundations, I believe the IS discipline will remain fragile… we will have squandered our chances (yet again) of coming to a deep understanding of the nature and purpose of information systems.*

Weber's words should resonate strongly when we consider two points: 1) that investment in information systems has taken an increasingly large share of the capital invested in western economies (National Science Board, 2003) and 2) in the midst of this investment, information systems courses are being excluded from business school accreditation (Ives, Valacich, Watson, & Zmud, 2002) and from curriculum in MBA training (Avison, 2003). It seems clear that while information systems are recognized as increasingly important, training in the management of information systems is not recognized with the same level of importance.

It is in this context of paradigmatic foundations that we consider the methodology of technique evaluation, that is, how we compare techniques in the area of systems analysis and design. The discussion of this topic is divided into three sections. The first section introduces the importance of evaluating the techniques that help define scope. The next section focuses on the type of representations we compare and the two basic functions in modeling: reading and writing. The third section suggests a generalized approach to evaluating analysis techniques, along with some considerations of this general method.

While this chapter is concerned primarily with how we evaluate analysis techniques, the lack of paradigmatic foundations that Weber laments overshadow our discussion of generalized methods for comparisons. For this reason, it seems natural to preface the main topic of the chapter with a few remarks about the relationship between systems analysis modeling techniques and the management of scope in information technology projects.