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In Search of The IS Question: Stalking the Wild Information Event in its Amorphous Habitat

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Abstract

The problem of defining the IS discipline has been approached from two perspectives: purpose and practice. While both of these approaches provide useful windows into the science of IS, they include a common limitation in capturing and defining its amorphous character. This paper examines defining statements of two IS-related disciplines to identify their components. We examine the components in the context of the IS discipline to identify key problems which impede progress in distinguishing a discipline-generative statement. Two characteristics of the definition components appear to sidetrack a clear disciplinary focus in IS:

1) Our concepts of information, far from uniform, affect our perceptions of what we do and why.

2) The practice of IS science itself is operating on its context in a manner which increasingly redefines and undermines traditional definitions of the business organizational context.

Introduction

Some authors argue that science unconstrained by rigid definitions is both feasible and effective (Kent 1978). However, methodologists point out that a process of gradual clarification cannot be but beneficial, even if admittedly subject to constant or at least periodic revisions (Ackoff 1962, Mason and Mitroff 1973). One of the most common criticisms of IS as a discipline is the lack of a unifying platform of theory. It is difficult, indeed to refer to IS as a discipline when we cannot agree on a core issue or set of issues, a theoretic basis, common principles, or purpose.

In IS we have attacked the problem of self-definition in two ways:

1) We develop frameworks of the discipline and its sub-areas;

2) We document the practice of the science --as it emerges-- through analyses of work done in the field over a specified period of time. These two approaches certainly offer insight into the history of the field. Yet the recent vigorous discussions over ISWorld on the nature of the IS discipline (Clarke et al. 1997) and the nature of Information and Knowledge (Bhatt et al. 1997) demonstrate that the struggle for identity remains both current and difficult.

Two disciplines in business that are, like IS, comparatively new and interdisciplinary, have been more successful in establishing defining statements. In the following sections we present the definitions, examine their components, and explore the usefulness of these components in pursuing an IS Core Question.

Definitions

Eli Cohen notes that other fields can define themselves in simple statements: "Psychology defines itself as the study of behavior; Mathematics as the study of numeric systems" (p.1). We might argue that as older, and more elementary fields of study, these disciplines have incomparable advantage in self-definition over younger disciplines (which lack the benefit of a distinctive cumulative history-) and those with the added complexity of interdisciplinary roots. Yet we may find definition in areas that do share those problems, specifically OR and Strategy. The *Operational Research Quarterly* presented the official definition of OR as:

…the application of the methods of science to complex problems arising in the direction and management of large systems of men, machines, materials and money in industry, business and defense. The distinctive approach is to develop a scientific model of the system, incorporating measurements of the factors such as choice and risk, with which to predict and compare the outcomes of alternate decision strategies or controls. The purpose is to help management determine its policy and actions scientifically. (Acar 1981).

In the spring of 1995, a group of strategists, the U.S. members of the editorial board of the *Strategic Management Journal*, met at a conference in Charm, Ohio. In one session they were asked to write down their individual ideas of a "core research question" in Strategy: a question which they felt summarized the point and purpose of Strategy. Thirty-nine of the 40 participants gave essentially the same question: "Why do some firms (within an industry) outperform others?" At that point, academics could build a strong argument that Strategy had, in fact, become a discipline. Researchers in the field have a common thrust behind the many sub-areas and various research directions they pursue.

Each of the four cited discipline-definitions meets the primary function of telling (1) what type of problem is studied. The definitions of the two newer, mixed-breed "sciences" also identify (2) the key construct and (3) the problem environment, or unit of analysis. In OR the problem is resource management, in Strategy it is firm performance. In OR, analysis and methods apply within the theoretic construct of systems; in Strategy, analysis and methods focus on the firm in its industry context.

In our emergent field of the development, use and value of information technology (IT), we study problems concerning its principal component, Information. The problems we study vary, however, by technologiess used, purpose, implementation, impact on the business environment, and even by changes in the environment, itself.

Key Construct

We may easily argue that units of analysis in our field have followed our development of tools and the environment in which they were perceived as needed and used. Early distinctions of IS resources could be classified into Data, Applications, Platform, and Network/telecommunications technology (Earl, 1989). Today, these are still commonly perceived as functional sub-areas of IS pedagogy and research. Practitioners and academics in our field sometimes resemble the five blind men exploring the elephant as they model

information in terms of the technology they use. Yet surely the construct transcends its tools. Popular frameworks of the past two decades incorporate characteristics of users and use, internal and external environments, and so forth. The framework of Mason and Mitroff (1973), for example, identifies the components of information systems to include persons, psychological types, and organizational contexts.

Data, information, learning, and knowledge in the organization have all been proposed as "the point." If information is the key construct of our discipline, the difficulty of defining the discipline immediately becomes clearer. Definitions of information vary with concepts of resource, purpose, and consequence, as we build models to fit our mental models using data, knowledge, action, and semantics. It is the sort of construct which make tautologies unavoidable: for instance, information is only information if it has value (otherwise it is data), yet value of information may be unknowable, immeasurable, and worst of all, subjective. A usable definition of information is elusive and unmanageable. It is not constrained by the tools we use to organize, analyze, or transmit data. Neither is it necessarily defined by a consequence: a decision or change in action. Pratt (1997) suggests that we think of it dynamically: not as entity, but rather as event. As we study its impact on its environment, and the impact of both on our discipline, we may find the dynamic view of information to be more valid than our traditional entity model.

Problem Environment

Historically, the environments in which information resources have been developed, used, and maintained, were sub-units of the organization: functional departments (payroll systems, client databases, etc.). Consequently we have pursued our concepts of our science in fairly narrow, or fairly well-defined systems within a business or organizational context. Mason and Mitroff's (1973) framework of information systems is clearly developed within a mental model of problem-solving or decision-making, one of the first perceived areas of value for computer technology. The Ives et al. (1980) framework recognizes a wider scope as it includes information system characteristics, environment characteristics, and performance measures.

Our concept of organization is evolving along with technological innovations and consequent business capabilities (de Raadt 1995). In the 1980s, while studies of the basic IT resources continued to evolve and studies of value of resources continued to focus on the individual firm, the development and implementation of such technologies as EDI created a new environmental context for our work in understanding the nature and value of information. That is, the organizational boundary became invalid in our mental models of information, its business value, and its implications for understanding business systems. In this decade, the Web is again redefining our model of information, firms' ability to share information, and their ability to do business. Indeed, the concept of the virtual organization gains credence as technology increasingly reduces transaction cost and likewise the reason for firms to exist (Coase 1937). Again, we find ourselves rethinking organizational methods, processes, and boundaries.

In short, it seems that much of the difficulty in defining our discipline arises out of the fact that we are describing both entities and environments which are continuously changing and

forcing change on each other. Imagine biology's dilemma were it to try to understand the frog if it had to do so by observing, over 30 years, the metamorphosis of a tadpole in a pond that was metamorphosing itself (partly in reaction) at the same time.

What Is the IS Question?

The reasons we do not yet have an IS question may provide guidance in approaching our problem. Is our key construct indeed information? Does it include technology? Does it involve function or value, and if so, in what way? Over the past 20 years our models have grown from those of data storage, processing and use for decision making to a current reality in which information is as much a problem in business as it is a solution. Herbert Simon (1995) reminded us that information itself should no longer be considered a critical asset: to the contrary, in many cases it is becoming a profound nuisance. Attention has become the scarce resource that IT must serve.

Our contextual framework has changed over the same period of time from business unit to enterprise systems, global systems, electronic markets, and virtual corporations. If we are to identify a core IS question, we propose that the dynamic nature of both key construct and problem environment must be incorporated. Banathy (1995) points out that "modern science has lulled us into near-complete acceptance of a state-determined view of the world" (p. 319). Yet state-determined models seem to have failed us in defining our field. Perhaps a workable definition requires that we let go of our entity model to conceptualize a science of metamorphoses of both construct and the systems that it simultaneously evolves in and alters.

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