

Critical Professional Discourses About Information and Communications Technologies and Social Life in the U.S.

Rob Kling

SLIS, Indiana University at Bloomington

kling@indiana.edu

Abstract: Looking back over the 1990s, it is also easy to see the widespread troubles of many ventures that depended upon advanced IT applications, including business process reengineering projects, enterprise systems, knowledge management projects, distance education courses, and famously -- some of the dot-com businesses of the 1990s. These "troubles" vary from substantial underperformance (ie. projects that were much more costly and/or produced much less social or business value than most of the participating IT professionals anticipated) and many outright failures. Many of these 'troubles' could have been avoided (or at least ameliorized) if the participating IT professionals had much more reliable and critical understanding of the relationships between IT configurations, socio-technical interventions, social behavior of other participants in different roles, and the dynamics of organizational and social change. Social Informatics is the name for the field that studies and theorizes this topic, and I will discuss it in more detail below. The key issue addressed in this paper is who will produce social informatics research for IT professionals, and where will they learn about important findings, theories, design approaches, etc.? The paper examines the record of computer science in the U.S. as a major contributor to the relevant research and teaching. It also examines the possibilities for new kinds of academic programs -- sometimes called "information schools" and "IT Schools" -- that are being developed to expand beyond the self-imposed boundaries of computer science and to integrate some organizational and social research as sites for social informatics.

Key words: computer science education, social informatics, organizational informatics, information science, IT professionals, cultural models, IT discourses

1. INTRODUCTION

In the 1990s, I argued that IT professionals (and especially computer science students) were being inadequately educated for the roles they were often playing in conceiving, developing and supporting new applications of information and communications technologies (IT) [22][23]. In particular, they were not learning empirically anchored analytical approaches to understanding the relationships between IT applications and human life in organizations and the larger society. I don't believe that my argument was particularly influential.

This article is more likely to be better appreciated in 2002 than its precursors were in the early 1990s. First, the cultural history of IT applications in the U.S. has changed substantially in the last decade. This recent cultural history include both the widely experienced benefits of public access to the Internet including the rise of new popular online services (such as e-Bay and Napster), and the demise of many dot-coms whose constitution as businesses was poorly understood. In addition, there are emerging new educational formations beyond computer science -- sometimes call Information Schools or IT Schools -- for educating IT professionals. This paper will examine whether these new educational programs provide more promising opportunities for educating IT professionals who can be more competent in developing workable and socially beneficial IT applications. In addition, this paper benefits from new lines of theorizing and new kinds of IT research from the late 1990s.

Looking back over the 1990s, it is also easy to see the widespread troubles of many ventures that depended upon advanced IT applications, including business process reengineering projects, enterprise systems, knowledge management projects, distance education courses, and famously - some of the dot-com businesses of the 1990s. These "troubles" vary from substantial underperformance (ie. projects that were much more costly and/or produced much less social or business value than most of the participating IT professionals anticipated) and many outright failures. It is difficult to find reliable estimates of the magnitude of these problems. It is often repeated that 70% of reengineering projects failed. However, some that "succeeded" also lead to firing thousands of employees in ways that cost organizations important expertise and subsequent business. In the case of the dot-coms, some estimate that their failure several billion dollars were drained from the U.S. stock market. In the case of distance education, it is difficult to quantify the distress of some students during their classes and their relative learning [14].

I suspect that many of these 'troubles' could have been avoided (or at least ameliorized) if the participating IT professionals had much more

reliable and critical understanding of the relationships between IT configurations, socio-technical interventions, social behavior of other participants in different roles, and the dynamics of organizational and social change. It would be foolish to hold IT professionals solely responsible for the troubles, since other managers and professionals also played key roles in devising these projects. Social Informatics [24] is the name for the field that studies and theorizes this topic, and I will discuss it in more detail below (also see <http://www.slis.indiana.edu/SI>).

The key issue addressed in this paper is who will produce social informatics research for IT professionals, and where will they learn about important findings, theories, design approaches, etc.? In particular, I will examine the record of computer science in the U.S. as a major contributor to the relevant research and teaching. I will also examine the possibilities for new kinds of academic programs -- sometimes called "information schools" and "IT Schools" -- that are being developed to expand beyond the self-imposed boundaries of computer science and to integrate some organizational and social research as sites for social informatics.

1.1 What can we learn from bridge designers?

The contrast between IT projects and the design of long span suspension bridges, such as the Golden Gate Bridge, is instructive. Petroski [44] examines how the craft of engineering these bridges developed in the 19th century, when new British bridges periodically failed during their construction or use (by trains). He describes how John Roebling, designer of the Brooklyn Bridge, paid intense attention to the failure modes of previous bridges to develop both a design and construction practices that would be safe and robust.

Roebling's engineering was critical in the sense that he carefully analyzed different designs, and their strengths and weaknesses. The term "critical" has several meanings, but all too many IT professionals identify it with fault-finding. Roebling loved bridges, and his critical analysis enabled him to design a bridge that was completed in 1883 and that is still functioning well today. Petroski notes that bridge designers learned much more from bridge failures than from what seemed like bridge successes. He also notes that over periods of 30 or more years, the design ideas that were carefully developed in one design paradigm seem to be forgotten, and newer bridges risk from suffering the failure modes of much older bridges. The abstract design issues for bridges have not changed much over time: to reliably carry people from one place to another, with certain vehicles, with certain aesthetics, and within specific construction and maintenance cost constraints. In contrast,

the abstract design issues for new IT applications can change dramatically every decade.

Roebing was aided by the ways in which long span bridges are public structures. Their designs are visible, their collapses are very notable and discussions about them are available for retrospective review. In contrast, many IT projects are relatively private, and "their troubles" are much harder to learn about analytically and systematically. Further, their effective socio-technical design is much more complex than that of bridges. After all, specific IT applications may work technologically, but not be utilized by the people who are supposed to benefit from them or used in ways that seem "counter-productive."

1.2 Reliable Knowledge about IT and Social Life for IT Professionals

Without ethnographic research about the troubles of some large scale expert systems [34], knowledge management projects [43], distance education courses [14], and on-line professional development forums [26], we would not have the quality of accounts to help us better conceptualize their failure modes. Unfortunately, the ideas from studies like these, or more integrated analyses that are based upon them [47], are rarely part of the educations of IT professionals.

There are, of course, exceptions to this grim claim. In the field of software engineering, there have been important analyses of the failure modes of large scale software development projects [5], as well as illustrative examples [40], and integrated analytical guidebooks [32]. In the U.S., some computer science students can take a course that examines IT applications and social life in a critical perspective [23][19]. Some students in information systems may be exposed to critical analyses of IT and organizational life [47]. However, these courses that examine IT and social life with a critical orientation constitute a tiny fraction of the formal education of IT professionals. Further, given the numerous families of IT applications and the varied contexts of their use, there is actually a relative paucity of reliable socio-technical research that is accessible to students in IT programs or to working IT professionals that is developed in ways that its contemporary relevance clear.

One key irony of information societies is that much of the discussion about them characterizes them as dependent, in part, upon advanced IT applications. However, the majority of IT professionals who develop these applications often seem ill educated to understand and anticipate their likely failure modes. I am making this sweeping claim based upon over 30 years of research, consulting and teaching in computer science, information science

and information systems. However, this is an empirical claim that could be investigated more systematically.

The focus of this paper is on the production of reliable socio-technical knowledge that could inform professional IT practice. Who in the U.S. will produce the critical professional knowledge to help IT professionals reliably answer questions such as the following?

- * Under what conditions will providing Internet access to K-12 schools actually improve children's education? [45]
- * What kinds of "digital government" services and activities are likely to improve the actual responsiveness and transparency of local, state and federal government agencies? [12]
- * What kinds of IT applications and organizational changes may improve the abilities of professionals in an organization with multiple offices to share their expertise? [43]
- * Under what conditions can public access to the Internet improve the quality of political discussion and strengthen the vitality of civil society?

This paper raises this question, and examines some possible answers -- academic computer science department and the emerging "information schools" and "IT schools."

2. DISCOURSES, CULTURAL MODELS AND THEIR INSTITUTIONAL CIRCUITS

First, I will develop three key concepts: discourses, cultural models and institutional circuits.

2.1 Discourses

Linguists characterize discourse as "language in use, or more broadly, the interactive production of meaning [2]." Socio-linguist James Gee [13] characterizes discourse in a less linguistic, and more cultural manner to refer to what is often communicated about certain topics within the constraints of a given time, place, or organizational, cultural, or institutional setting. Thus we could contrast "the discourse of computer scientists about the ARPANET in the early 1980s," "the official discourse about public access to the Internet by the Clinton/Gore administration in the mid-1990s," "the mid-1990's

Human Choice and Computers

Issues of Choice and Quality of Life in the Information
Society

Brunnstein, K.; Berleur, J. (Eds.)

2002, XVI, 336 p., Hardcover

ISBN: 978-1-4020-7185-0