

# Achieving the Intercalation of the Social and the Technical in Computing: The SREC (Socially Robust and Enduring Computing) Program

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## ABSTRACT

This Poster addresses the core issue of iSchool research: How to achieve adequate accounts of what happens when people and organizations use automated (that is, computer-based) information and communication technologies. It outlines the authors' vision of how persuasive, balanced accounts that properly integrate social and technical perspectives on computing might be achieved, and a research program intended to make this vision real.

## Categories and Subject Descriptors

K. Computing Milieux. K.0 Computing Milieux, General K.7.0 [The Computing Professions, General]

## General Terms

Management, Performance, Design, Economics, Reliability, Human Factors, Standardization, Theory, Legal Aspects.

## Keywords

Combining Technical and Social Aspects of Computing, Professional Institutionalization of Computing, the Future of Computing  
Keywords are your own designated keywords.

## 1. INTRODUCTION

Computer-based information systems (CISs) appear in an ever increasing array of human activities, and these systems generally continue to grow in complexity. The humans who try to use the information CISs produce continue to have problems with them.

While doubtless some of these problems encountered are new and unique to computerizing new domains, others are familiar, similar to problems encountered before—e.g., a new document-handling system not well articulated with legacy systems, so things one could do with the old system, like scanning, are no longer possible. This poster describes several elements of a program to eliminate at least some of these continuing problems and thus aims to chart a way forward for computing.

## 2. EMPIRICAL BASE

Our project is based first on a reading of the substantial body of empirical research on and professional practice in computing, much of it fostered in iSchool environments. Our reading of this literature stresses how many of computing's problems derive from failing to make CISs socially robust enough. That is, they don't endure because of inadequate or improper attention to the social in one or more elements of the melange of design, implementation, and/or maintenance. This research suggests that greatly increasing their social robustness could mean significant improvement in how they work.

## 3. THE ENSUING ANALYSIS

In our view, the failure to make computer-based information systems more socially robust and therefore more enduring is not a matter of oversight. Rather, it is connected to important aspects of how computing, in both disciplinary and "in practice" aspects, has come to be socially constructed. An almost exclusive focus on technical virtuosity, for example, has obscured the need for social virtuosity.

Given this professional history, computer-based information systems (CISs) will not become socially robust merely by recognizing that they are not and wishing them to become so; additional steps are necessary. In the poster, we illustrate these points through a brief characterization of earlier as well as more recent approaches to software development and via discussion of earlier attempts within computing to take account of the social. This is followed by discussion of some recent forms of computing, notably Free/Libre and/or Open Source Software development projects, "Web 2.0" practices, and Participatory Design. We content that it is not enough, as systems in these

forms do, to alternate some social with the predominantly technical moments. Even these quasi-socially robust forms of computing, while suggestive, remain insufficiently robust socially for reasons ultimately very similar to those hampering other CISs. In sum, analytically, our program identifies several barriers internal to the current social construction of computing disciplines and professions which interfere with attaining more properly balanced CISs and therefore with making them more enduring.

#### **4. THE PROGRAMATIC IMPLICATION: INTERCALATION OF THE SOCIAL AND THE TECHNICAL AS THE GOAL**

Rather, basic approaches to CISs need to be *reconstructed* if they are to become socially robust enough. To illustrate how this might be done, we present a conception of computing in which the social and the technical are effectively intercalated. This conception provides a vision powerful enough to base sufficiently socially robust computing. We draw on the Science, Technology, and Society literature to conceptualize a possible future relationship between social and the technical moments in these disciplines, that of “intercalation” [1]. In a state of intercalation, the various moments that make up a profession operate in mutual respect but often at some distance from each other. We argue that, as it would create enough conceptual space for more enduring information systems, intercalation of the social and the technical is the most plausible and yet still worthwhile condition for the computing disciplines to aim at.

#### **5. THE RESEARCH PROJECTS**

Finally, the poster outlines key elements of our research projects on Socially Robust and Enduring Computing. SREC involves both field and action research on the theoretical and practical problems of integrating social and technical perspectives in existing projects. It aims to illuminate the prospects for intercalation of the social and technical by testing whether such a relationship indeed increases the ease of implementation, the utility, and the longevity of computer-based information systems. (The SREC program and its research projects are an international collaboration, being carried out by faculty from the Faculty of Sociology and the Department of Computer Science and Engineering at the University of Trento in Italy, faculty from the Social Informatics group in the School of Informatics at Indiana University/Bloomington, and other associated scholars.)

## **6. CONCLUSION: THE SREC PROGRAM AND THE INTERCALATION OF THE SOCIAL AND THE TECHNICAL IN COMPUTING**

In the absence of shared understandings of how to intercalate the technical and the social, we expect humans to continue to have difficulty making CISs work well. Achieving such understandings depends upon not only acknowledging computing's sociality but also on embodying them into the development process.

The SREC program is intended to be an effective test of whether our envisioned reconstructive intervention is likely to work. Its foundational goal is to develop more inclusive intellectual principles on which to base computing practices. This goal will be achieved, we believe, by organizing software development to be properly symmetrical regarding its social and technical aspects. As it is being carried out collaboratively by scholars from both the computing and the social sciences, SREC combines methodological approaches used in computer science (such as creation and testing through use of development tools) with those in social science, including ethnographic studies of “quasi-socially robust” computing. Further, it is an important goal of SREC to prefigure and indeed to illustrate what computing practices that properly integrate the social and the technical would look like, what this would mean in practice. For example, SREC's applied research program embodies these understandings in design specifications that are then built into new design tools, as well as working with local firms and organizations to develop their own SREC capabilities.

#### **7. ACKNOWLEDGEMENTS**

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#### **8. REFERENCE**

[1] Galison, P. 1997 *Image and Logic*. University of Chicago Press.