

Myths and Manifestos in CSCW Research: Reflections on Research Agendas

Paul Dourish

School of Information and Computer Science
University of California, Irvine

DRAFT – not for distribution

Introduction

As is regularly noted, CSCW is an inherently interdisciplinary field, bringing together a diverse range of sociologists, psychologists, designers, engineers, computer scientists, organizational theorists, and more. Successful research in CSCW typically requires incorporating different perspectives and understanding the mutual implications of different approaches to understanding collective action. Landmark research contributions, such as Suchman's analysis of interactive system design (ref), the Coordinator (ref), the Air Traffic Control study (ref), Grudin's study of calendar system use (ref), etc., all exhibit this flavor; they contribute to an understanding not just of social practices or technological arrangements, but to the relationship between the two.

We normally invoke the issue of interdisciplinarity in order to point to the difficulties involved in talking “across disciplinary boundaries;” the “great divide” that must somehow be crossed in carrying out research of this sort (ref). However, this acknowledgement of the problems of interdisciplinary research runs the risk of blinding us to other ways to distinguish between research contributions. Not all boundaries, after all, are disciplinary ones. As well as a range of disciplines, CSCW also manifests a range of research agendas, perspectives, and styles. In this paper, my goal is to focus not so much on traditional disciplinary boundaries, but rather at the different research programs that are expressed in CSCW research. My basic motivation is that I believe that characterizing CSCW research in terms of disciplinary contributions results in a number of systematic confusions and debates whose foundations are specious. The disciplinary conception of CSCW lays communication failures at the door of interdisciplinarity; I believe that the failure to distinguish between different research agendas is a more significant problem.

Four Research Programs

As a first pass, let's consider CSCW research as being aligned in four programs: analytic, empirical, technical, and design:

- the **analytic** program is concerned with developing theories of human social action and interaction amongst people and technologies. Theoretical models, analytic frameworks, and abstract understandings are the primary outcomes of this research program.
- the **empirical** program is concerned with developing a corpus of evidence concerning the interactions amongst people and technologies. Empirical evidence

can be gathered via a number of different mechanisms, including surveys, ethnographic observation, and laboratory-based experimentation.

- the **technical** program is concerned with developing technologies, techniques, infrastructures, and algorithms that can be applied to create new computer-based tools for cooperative work. Consistency control techniques, image recognition algorithms, wide-area event notification systems, and technological models of awareness are examples of work conducted within the technical program.
- the **design** program is concerned with the creation of novel applications offering compelling user experiences. Where the technical program is concerned with underlying technologies and techniques, the design program has a more holistic focus.

The separation of these programs may seem somewhat artificial, and of course it is. For instance, the elements of one program rarely occur in isolation. The combination of approaches takes two forms, one pragmatic and one ideological. The pragmatic combination of approaches is a consequence of the fact that it is impossible to present empirical results without a set of analytic commitments, just as it is impossible to present a design contribution without solving technical problems; the ideological combination of approaches arises from CSCW's self-image as interdisciplinary, which manifests itself as a collective pressure to draw together elements from multiple perspectives. (The forms of these combinations will be discussed shortly.)

However, although the separation is artificial, it is nonetheless useful. It is relevant in two ways. The first is that, while it might be inappropriate or impossible to characterize a specific research activity as belonging to one or another program, we can certainly characterize research *contributions* in terms of these programs. For instance, although analytic and empirical elements are frequently found together in the research that we do, we can still distinguish between analytic and empirical contributions. Secondly, and relatedly, the four programs are separated here because they reflect different approaches to research, different concerns and problems, and different criteria for both problem selection and evaluation. So, the criteria by which a technical contribution will be assessed will be quite different from those relevant to a design contribution, even though both forms of work concern themselves with the development of novel technologies.

[[agendas as styles of reading and writing]]

The motivation for introducing these distinctions is to provide for a more detailed assessment of the forms of research results. I am certainly not advocating one over another, but trying to move beyond the basic characterization of "technical work" and "social papers." The component disciplines in CSCW frequently suffer a certain degree of blindness towards each other's work; the distinction between technical and design papers, for example, is often obscure to social science researchers, while computer scientists often fail to adequately distinguish between empirical and analytic contributions from the social sciences. I would argue that in order to assess and to appropriately build upon a research result, it's important to be clear about what sort of research result it is. As I will suggest below, this has not always been clear. In fact, a number of persistent confusions arise, and in turn give rise to certain myths about CSCW research which, over time, have sunk into the unspoken background to our research.

Styles of Research Contributions

Although I distinguish between four research programs, I commented that they rarely appear singly in a given piece of research, or in a research contribution such as a published paper. They rarely stand on their own. However, some combinations are more common than others. Indeed, we are quite used to the fact that certain formulaic genres of research contribution recur regularly in the literature. We can characterize some of these genres in terms of their programmatic concerns.

- *Design/empirical*. D/E papers are roughly of the form, “we build X and this is what happened.” The form of empirical evidence may be formal lab-based assessment or informal deployment experience, but are presented in order to justify or reflect on features of the design of the artifact. D/E papers are often (rather dismissively) referred to as “CHI-style” papers in CSCW and especially from a European perspective, which tends to find them weak due to the absence of an analytic component.
- *Empirical/design*. E/D papers are roughly of the form, “we saw E and so we built A.” They may or may not include a further empirical component (E/D/E); perhaps, charitably, the research often follows the form E/D/E even if a specific paper or publication is only E/D. Similarly, E/D papers may actually be of the form D/E/D when they focus on the evaluation-driven redesign of an artifact or application.
- *Empirical/analytic*. E/A papers are of the form, “we observed E, which leads us to theoretical conclusion A.”
- *Analytic/empirical*. A/E papers are roughly of the form, “our theoretical understanding predicts P, and these empirical results confirm/disconfirm it.” Again, both this style and the previous style may be combined into a A/E/A form.
- *Technical/design*. T/D papers are of the form, “We created technology T, and demonstrate its utility by presenting application D that exploits it.”
- *Design/technical*. D/T papers are roughly of the form, “our experiences building application D led us to create generic technology T.” So, for example, reports of the generalization involved in refactoring some component of an application as a toolkit or platform, or the algorithmic details necessary to support a specific application, follow this model.

At this point, we should stop to note some interesting points that this structure illuminates. The most significant observation, perhaps, is the absence of certain styles (as least as regularly-occurring forms of contribution.) While there is clearly work in the empirical/design style, there is very little in the empirical/technical style; empirical observations of cooperative activity seem to support the design of applications, but not the design of underlying technologies directly. (Of course, there may be a more abstracted connection that reaches from empirical to design to technical work.)

Perhaps more significantly, there is very little work of an analytic/technical nature (and little of an analytic/design nature). Theories of social action and interaction do not, in general, seem to be a conventional way to drive the design of technology or applications.

In a field which attempts to bring together and fuse theoretical approaches, the absence of this particular combination may be significant. If we believe that CSCW should be able to draw on sociological understandings to derive implications not simply for application development but for fundamental questions of technology design, then it would seem that the analytic/technological style ought to be a clear and common concern; however, this does not appear to be the case in general.

Overall, then, it seems that the conventional styles of technology (rather than application) development are motivated by technical concerns. Instead, they are driven by concerns for modularity, generality, performance, etc. While the design level (i.e. of applications) is an important one, the technical level (of underlying technologies) is, we would expect, the level at which lasting impact can be achieved, and yet this area is poorly connected to the theories and models that drive social analysis.

Some Persistent Problems

Separating and independently identifying the different research programs and research styles at work in CSCW, we can gain some valuable insight into the structure of the field and the nature of different contributions. As was suggested, each program has a separate set of criteria by which work should be evaluated. Again, my intention here is not to favor one approach over another, but rather to recognize the different styles of work represented. Clearly, in reading or considering any research contribution, we need to be aware of the form of contribution that it professes to be, as part of understanding its relationship to the endeavor as a whole. Within our own disciplinary boundaries, we understand what those different forms of contribution and different metrics of value might be. However, when conducting interdisciplinary work, it can be valuable to think more broadly about the forms of contribution. In particular, I would argue that some persistent debates within the CSCW research community arise from regular confusion over the distinctions I have drawn here. Consider a few:

Implications For Design. The problem of bridging between ethnographic field studies and other empirical forms of analysis to the design of novel technologies is one that comes up repeatedly, in a range of guises. For students, it frequently manifests itself as a problem of framing their data in terms of potential design contributions. At other times, it appears as a criterion by which empirical work is to be assessed, leading to the infamous “bulleted list” of design implications at the end of ethnographic papers (implications which sometimes, ironically, detract from the paper as a whole.) Arguably, though, this need to move from empirical evidence to design implications “deletes” the analytic. It involves reading field study papers as empirical rather than analytic contributions, or rather, reading them as empirical but without an implied relationship to design. Frequently, the significant consequences of empirical investigations are not in terms of design, but in terms of the challenge they present to analytic assumptions and orientations; and similarly, it is frequently in the analytic underpinnings to social science research that we can find the strongest basis for effective design. In seeking “implications for design,” we skip past the “implications for analysis” or even “implications for technology” which may, in fact, be more appropriate ways to capitalize on the results. Similarly, by seeking implications for design in empirical work (or within the empirical

materials) rather than in the analytic framework within which the empirical work is conducted, we may miss implications of much greater and broader significance.

The W. An issue that seems to emerge regularly in discussions around CSCW, particularly over the past couple of years, is the nature of the “W” – the role of “work” in CSCW research. To what extent should CSCW concern itself exclusively or primarily with workplace settings? Clearly, the Scandinavian tradition of Participatory Design, which is broadly represented in CSCW research, has historically been concerned especially with problems of workplace democracy, and an orientation to Work has therefore been a major part of that research. On the other hand, the more “micro-level” forms of social analysis operate at a level where the nature of the setting – be it work, home, or public casual encounters between people and technology – is essentially irrelevant. For these approaches, “work” has a much broader meaning, the meaning suggested by Strauss’ use of the term “articulation work,” or the work that Conversation Analysis demonstrates is required to manufacture coherence in spoken interaction. In other words, then, the distinction that is being raised is between “work” as an analytic category and as an empirical one. Those whose concern is primarily work with workplaces, and who see other settings of interaction as being less germane to CSCW’s research interests, are essentially concerned with an empirical demarcation of relevance; those who look towards the analytic relevance of research contributions are often less inclined to exclude particular settings within which “work” (analytically construed) can still take place. (Those whose concern is design or technology oriented tend to be more catholic in their interpretations of the relevance of different domains of activity.)

The Role of Technology. Drawing distinctions between the different research programs allows us to see different opportunities. Social scientists often see the role of computers as an empirical matter; technology is a feature of settings that are organized and understood according to the same analytic frames that we would apply to settings without technology. According to this view, there are no analytic consequences of the presence or use of technology in particular settings, and therefore that the forms of analysis we develop and apply will be no different in technical settings than in others. One manifestation of this is the use of a “real-world” (that is, technology-free) baseline for comparison within the same analytic frame. However, if we believe that computation is analytically, rather than simply empirically, consequential for social science, then there is value too in distinguishing between the design and technical traditions within systems development. Just as a blindness to the distinctions between empirical and analytic contributions can cause computer scientists to misinterpret the force of social science arguments, so too a concern with computation as an empirical matter results in social science paying attention to design contributions (that is, technology embedded in settings) while passing over the more foundational technical research (in which, arguably, the settings are often embedded in the technology).