

## Interview with Jonathan Grudin on “Computer-Supported Cooperative Work and Social Computing”

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(HCI) and Computer-Supported Cooperative Work (CSCW). Grudin is a pioneer of the field of CSCW and one of its most prolific contributors. He was awarded the inaugural CSCW Lasting Impact Award in 2014 on the basis of this work. Prior to working at Microsoft Research, Grudin was a Professor of Information and Computer Science at the University of California, Irvine from 1991 to 1998. His career has also spanned numerous institutions. He worked at Wang Laboratories as a Computer Programmer (1974–1975 and 1983–1986). He was a Visiting Scientist in the Psychology and Artificial Intelligence Laboratories at MIT (1976–1979) and then a NATO Postdoctoral Fellow at the Medical Research Council’s Applied Psychology Unit (now known as the Cognition and Brain Sciences Unit (1982–1983). He spent from 1986–1989 at the Microelectronics and Computer Technology Corporation before taking a series of faculty positions (including visiting professorships) at Aarhus University (1989–1991), the University of California, Irvine (1991–1998), Keio University (1995), and the University of Oslo (1997).

**BISE:** In the late 1980s you have co-authored a paper with the title “Why CSCW applications fail”. Which of the reasons why CSCW applications and projects fail still hold today?

**Grudin:** First, what does it mean to fail? Some products fail in the marketplace and are discontinued, and some systems fail spectacularly, and often a technology works for some people but not others, and is considered a success by some and not others, or just falls short of its potential. So, you want to be clear about what you mean by failure. The sources of trouble I described back then mostly arose from insufficient understanding of organizational processes and team processes, and I thought we would quickly overcome them. But today I find that people are encountering similar problems for a simple reason: As time goes

on we try to support work in more and more detailed ways and in different kinds of works environments, work contexts, and we don't understand the nuanced activities we are hoping to support. So we do still encounter some of the same problems in these new contexts. And then we do have some new challenges. Today, there is more time pressure for developers. The technology has to fit into more complex existing practices, including systems that people are using outside their work that they have developed habits around. So, developers do not have the clean slate that they had in the past. Those are some of the reasons I see for there still being problems now.

**BISE:** E-mail is often referenced as the “only” successful groupware – on the other side even e-mail is seen as a failure by many (it is around since the 1980s but still does not work ...). How do you see this? Is e-mail a success or a failure?

**Grudin:** We set up this interview using e-mail, so e-mail works. And also we are using Skype for this interview, so e-mail is no longer the only success. I'd say in the 1980s e-mail was very different than it is today. Storage was so expensive that e-mail messages were ephemeral; saving them would just be too expensive. Also, it was impossible to send attachments. A lot of people who do not like using e-mail now are using something that is lightweight, which is what e-mail used to be. Originally, e-mail was the informal way to communicate, in contrast to formal written memos or documents. And now e-mail is often seen as the more formal way to communicate, so people are looking for something more informal and ephemeral, such as Snap Chat or Twitter. So part of the reason that some people are not happy with e-mail now is that it no longer serves the purposes it once did. When I started studying IM and talked to younger people about why they were using it, some explicitly said that they considered IM to be the informal approach, unlike e-mail which was formal. Something you say in an e-mail could come up in a meeting and be held against you. So, they were looking to IM for exactly what we looked to e-mail for 20 years earlier.

**BISE:** The ACM CSCW conference has changed its name to CSCW & Social Computing. What about the intellectual leadership? In the 1990s, the CSCW research field had the intellectual leadership on important concepts like awareness, approaches like ethnography, and on technologies such as recommender systems. Do you see a comparable intellectual leadership of the CSCW conference in the area of Social Computing? If yes: Where? If no: Why not?

**Grudin:** One thing that changed and motivated the expansion of CSCW to Social Computing, the dissatisfaction with the limited focus, is that in the beginning technology was expensive, so the only people that could use technology for collaboration were those in companies that

could afford it. As a result, it made sense to focus on work, Computer-Supported Cooperative *Work*. In the 1990s, as the Internet spread and the Web came along, the narrow focus on work was not quite as compelling – so some people wanted to expand it.

Before the Internet/Web spread, CSCW was the intellectual hub for the few hundred researchers and developers who were focused on collaboration in companies that could afford groupware. But today Social Media is used by billions of consumers and tens of thousands of researchers and developers are engaged with it. So, the field has grown by three or four orders of magnitude. But the CSCW research organizations themselves are the same size. So, although CSCW has led in some systems work, in some descriptive analysis, a relatively small percentage of the people working in this area look to CSCW for leadership – at least in North America. But there is an opportunity for intellectual leadership in enterprise uses of Social Media – again because we do not understand organizational behavior well enough to design from theory.

**BISE:** Coming back to these few hundred CSCW researchers that are overrun by all the product development. Is there anything from the CSCW research showing up in products? Has anything from the research influenced product development?

**Grudin:** Microsoft hired CSCW people and we have had a lot of small influences in product development. 15 years ago Microsoft hired several ethnographers, influenced by the prominence of ethnography in CSCW. One example of influence is the work on real time co-authorship by Chengzheng Sun. He and his colleagues built prototypes and published articles at CSCW conferences and in journals, Sun organized tutorials and workshops at CSCW conferences. Some were attended by engineers and designers from Google who worked on Google Docs and Google Wave. Through such contacts Sun was invited to speak at Google and Microsoft as they worked on co-authorship features. His son founded a product startup, Codoxware.

**BISE:** What are the core theories of CSCW as a field of science? What do you see as the most interesting and influential concept/theory currently under discussion?

**Grudin:** I came from the natural sciences. My view of science is that you do not start with theories. Physics and chemistry and biology were around for a very long time. The theoreticians early on were called astrologers, alchemists and so on. What they needed was good descriptive data. Only when Kepler had extremely detailed data of planetary motion was he able to rule out the belief that all motion had to be in circles. So, you need the data. Sometimes we are in a rush to get the theory and we risk falling on the side of the alchemists – who were theoretical but were not really progressing the science in most cases.

I do not know what theories have influenced other people. But one that interests me is Robert Ellickson's 1994 book "Order without Law", which is about community and social practices. He does not say much about organizational behavior, but if you put his insights into behavior together with the trend toward greater visibility of behavior you get to the heart of privacy issues. That is one example that I find particularly interesting and particularly significant.

**BISE:** Where do you see opportunities for interesting basic research in CSCW and Social Computing?

**Grudin:** There is a lot of interest in data mining and machine learning. And there is an opportunity in complementing or working alongside areas that will be very active. So, at some point it will sink in that telemetry data can tell us only what and not why, and it will sink in that machines will never seem intelligent if they do not know when and how to communicate what they learn. Understanding this requires understanding subtle social phenomena. There will be tremendous opportunity for people with knowledge and intuition and interest in organizational and social behavior – Especially if they can differentiate correlation and causation, and if they relentlessly guard against confirmation bias. Not many people out there have those skills, and our field can produce people with them. Whether we focus on big data or machine learning or systems development or ethnography, learning enough about each – what it is good for and what it is not good for, what a good instance of it looks like and what a bad instance looks like, how to talk to people in each field, and how to listen to them. If you can do that, you will find many opportunities for useful research.

**BISE:** Can we ever get to an end with descriptive work in CSCW research because technology is changing so quickly that whatever is out there is changing every few months?

**Grudin:** You are right that there is all this change, but there are also some constants, in particular in human behavior. Human nature does not change so quickly. That is an advantage for those interested studying the human behavior and team behavior and organizational behavior. If you have developed intuitions for those behavioral constants, you are in a good position to understand how a new technology is likely to play out in a team context or an organizational context. And that will be very valuable. We need people who understand organizational behavior and team behavior and how technologies can impact them, people who have developed intuitions that provide more than a 50:50 guess about how a new technology might fit in or not fit in. Help your students understand the difference between correlation and causal relationships. Help them see that to overcome confirmation bias they must welcome not only data supporting their hypothesis but evidence that contradicts it. Those skills are rare, and valuable.

**BISE:** Is developing intuition the best we can do? Isn't it possible to codify some of this intuition in theories?

**Grudin:** It depends on how you define theory, I guess. Frameworks are good. Frameworks like Mintzberg's framework, McGrath's frameworks. McGrath had frameworks and he had theories – and I find his frameworks very useful. His theories were difficult for my students to read through and difficult to apply. Finding patterns in data helps us advance, and if you call that theory, fine.

**BISE:** Thank you very much for this interview.