Situatedness: Mind over Machine

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When I joined the AI-Lab as a recent Computer Science graduate from Germany in January 1995 I brought with me some knowledge of knowledge-based systems research and the urge to explore more contextual notions of knowledge and expertise, and what it actually means to "apply" knowledge. I was intrigued by the prospect of working in a large, federally funded research project looking at work practices in an advanced paper mill which would allow me to discontinue the tendency of expert systems researchers to look at real world problems while avoiding to explore the nitty gritty details of actual work. I joined the then still active "Situated Design" group within the AI Lab that explored combining emerging cognitive science views regarding cognition as "situated" and Scandinavian software development approaches in order to develop a software design methodology that would explicitly account for work practices and "situatedness". Nowadays, there is a variety of "user-centered" design approaches but back then, investigating how expertise manifests within the constraints of real work(places) and how this phenomenon could be supported by properly designed IT systems still meant to boldly go beyond where most IT researchers would ever want to go.

Spending what fortunately became my formative scientific years at the AI Lab meant at least two things. First of all, I experienced what I would now describe as becoming a member of a scientific community of practice consisting of all members of the lab and, of course, its director Professor Rolf Pfeifer. I shared office with two more experienced colleagues that gradually introduced me to their "professional practice". A PhD student like myself but a couple of years ahead, Martin Mueller was the heart and the soul of the Situated Design group. He also helped me greatly to settle in Zurich which became my home for almost six years. Ralf Salomon, now a professor himself, was staying at the lab as a Post-Doc. He was involved in more senior scientific activities and I benefited a lot from his experience including writing papers, enjoying paper acceptances and, perhaps even more importantly, coping with rejections.

The other major aspect of having spent several years at the AI Lab is the profound impact Rolf Pfeifer's thinking had – and still has – on the way I look at things and the way I ask questions. Contrary to popular belief I was never involved in AI research while staying at the lab. Situated Design and Embodied Artificial Intelligence shared many assumptions though regarding intelligence, knowledge and expertise as phenomena that are not given but that manifest in an agent's interaction with its physical and also social environment.

A number of my current research activities have their roots in work I did at the AI Lab and can be summarized as two inter-related research programs which I call Embodied Information Science and Computing in Context. The former goes back to 1996/97 when I became interested in (primarily North American) information science research into human information behavior and information needs. I started to question whether the prevailing models were indeed causal explanations or perhaps just descriptive explanations subject to the frame-of-reference problem that already shook traditional AI in its foundations. More recently, I began to look into how physical and physiological aspects influence what is typically described as information behavior. Clearly, embodiment as a constituent of human-information interaction deserves more attention in (embodied) information science than it currently attracts. We have known for quite a while that spatial arrangements including library layouts or desktop arrangements not only support but even seem to help reduce task complexity and may even allow to "outsource" memory capacity. Findings from more recent information behavior studies clearly suggest (but rarely explore) that information behavior is subject to physical and physiological conditions including lighting conditions, body orientation, eyesight, etc. Embodied Information Science is the effort to clarify the role of embodiment in information behavior studies.

Computing in Context (also the title of a popular postgraduate lecture I am teaching at the University of Tasmania, Australia) is built on similar assumptions but is geared towards Human-Computer Interaction and Ubiquitous Computing. Again, the perspective is that human cognition and behavior are situated and the question is how technology design should account for it. This program goes back to some of my PhD research on interactive (and therefore more situated) approaches to information filtering. Results were published as a full paper at the leading HCI conference ACM SIGCHI in 1998 and also in a contribution to a book I and Danyel Fisher (then UC Irvine, now Microsoft Research) edited for Springer, London. Later on I used the perspective to look at emerging work in Ubiquitious Computing and also to contribute to the development of new approaches to mobile guide design (with Christoph Goeth, University of Zurich and Nicola Bidwell, James Cook University, Australia; also the thematic area of a three year research grant by the Australian Research Council).

Even some of my more recent work on spam filtering and digital redlining (with Jeff Huang and Michael Twidale, University of Illinois at Urbana-Champaign) and on information seeking in online communities reflects Rolf's strong bottom-up perspective and his continuous questioning of "traditional thinking". Mind over machine!