

Book Review

Public and Situated Displays: Social and Interactional Aspects of Shared Display Technologies, Kenton O’Hara, Mark Perry, Elizabeth Churchill and Daniel Russell (eds.), The Kluwer International Series on Computer Supported Cooperative Work, 2003, 456 pp. ISBN 1-4020-1677-8

Public and Situated Displays is a collection of research papers covering a wide range of topics in the area of shared displays. The book is a good introduction to the breadth of the area – and is itself a good example of how broad and sometimes disparate the field can be. Although this variety leads to a collection that sometimes feels disorganized, it is a good reflection of a fairly new research area. It is the first book that I have seen that is focused particularly on shared displays – and even better, focused on the way that they affect, enable, change, and support existing and novel human social interaction.

However, the goal of investigating social and interactional aspects is only really achieved by a few papers, and one of the things that becomes apparent after reading the book is just how far the field is from taking on these explorations of social issues as a matter of course in a research project. Despite this shortfall, there are several valuable papers in the book, some of which lead the way in showing how research could be done in the area. Because of these, I believe that the book will become required reading for anyone working in the area.

First, an overview of the book’s contents. The book contains 16 research papers organized into four sections: Knowledge work and collaboration, Awareness and coordination, Community and social connectedness, and Mobility. *Knowledge work and collaboration* describes several different large-display systems used to support work groups. This group of papers describes several variations on the theme of an interactive shared whiteboard, but applied in different work settings. The *awareness and coordination* section gives a set of more detailed case studies of shared displays – for example, an office door display, a room booking system, and a bed-assignment board in a hospital ward. The displays in this section are smaller and more dedicated to particular tasks than the shared-whiteboard style displays seen earlier. In addition, this section contains two explorations of non-digital displays (the bed board, and the use of household mail as a display). The systems in the

community and social connectedness section are variations on a physical corkboard and community notice boards, where content is not created by the observers, and the flow of information is more unidirectional than with a whiteboard. The final section on *mobility* uses the idea of situated displays that can act as waypoints in a mobile worker's travels. The displays themselves are not so important in this section; the papers look at different types of mobile and ubiquitous devices that could be used to interact with these fixed displays, and at software infrastructures that could be used to support this style of interaction.

However, this organization into four themes is tenuous. Within each theme there are papers about systems, infrastructures, design processes, and real-world observations, and this range leads to a feeling of disorganization in the book. The papers in each of the four categories are not always strongly united, there are papers that seem like a poor fit to their section, and the headings seem too broad to adequately differentiate the papers from one another. One reason here is that the type of research (e.g., development, design, observation) is often more obvious in the paper than the interaction issue (e.g., community) that organizes the group. Nevertheless, there is a great deal of material here, and many different kinds of readers will be able to find value in different parts of the collection.

Aside from these minor organizational difficulties, my main criticism of the book is that it does not focus nearly as much on social issues as I had hoped. Despite the fact that the book is subtitled "social and interactional aspects of shared display technologies", there is not a strong focus on social or interactional issues in many of the papers. Several papers are descriptions of research prototypes that have only been deployed for a short time, and the investigation into any kind of interaction around these displays is therefore brief. Although reporting measures like the amount of use or the number of posts does reflect one kind of interaction, it seems as though these are reported primarily because they are easy to gather. These kinds of analyses do not tell us much at all about human interaction and how the displays are used in shared activity. Some of the papers do begin to discuss social issues in their observational results, but there is not a great deal for a book dedicated to the topic. This is not so much a criticism as a realization that the research community is still in many ways system-focused; this book makes it fairly clear that researchers need to do more in the direction of studying the real use of their systems (and there are a couple of good examples in the book, as I discuss below).

Another thing that came out as I read the book was an uneasy feeling about the overall value of computational public displays. There is no "killer app" yet for this technology, and it is not clear that these systems are much better than their more traditional equivalents (e.g., a paper notice board or an ordinary whiteboard). Organizations currently are not clamouring to

purchase the kinds of shared displays that are discussed in the book; and the ones that organizations do buy (e.g., airport arrival/departure signs, electronic highway signs) are not studied here. It seems odd that even though public situated displays are “a ubiquitous part of our environment and visual culture” (p. xvii), the research community has not been able to find many situations where computational shared displays are a clear win.

These two criticisms are not fatal flaws – there are plenty of interesting things in the book that still make it a worthwhile read. However, the criticisms do serve to highlight a couple of papers that are excellent examples of what the entire book should be like. Two papers in particular made the book worth reading – “The Social Construction of Displays” (Crabtree, Hemmings, and Rodden), and “Situated Web Signs and the Ordering of Social Action” (O’Hara, Perry, and Lewis). Both of these papers *really* look at social and interactional aspects of situated displays: the first with a non-technological display, and the second with a technological one.

From my perspective as a builder of groupware systems, “The social construction of displays” is the most important paper in the book. It looks at display as a verb rather than the noun – display as the act of making something visible to another person, rather than as a general-purpose container for arbitrary content. This is valuable because it shows displaying as an inherently collaborative and social act, in which one person intends to communicate something to another. The paper shows how acts of displaying are part of articulation work, used to coordinate some shared task, and how they are naturally situated within the work context, using both artifacts and locations as part of the “displaying.” The paper’s examples are from an observational study of how paper mail is handled in the home – and even this mundane setting shows a number of interesting things about displaying that are not considered by many technological efforts. Three of several discussed in the paper:

- Particular locations are sites for particular types of display: “the collection point for mail [e.g., the entrance to the house] is one [location] at which displaying may go on. The displaying simply consists of this: seeing that mail has arrived” (p. 176).
- Each piece of mail is itself a display: “there is often a visibility to mail that displays and so announces its practical character: what it is about, who it is from, and who may thus be an appropriate recipient and so be entitled to open it” (p. 177).
- People organize mail in the home as displays: “the relevance of mail to other household members is organized through particular assemblages of display, with each assemblage articulating particular relevancy statuses” (p. 178). For example, mail that must be dealt with before a person leaves the house might be placed on their chair or on their briefcase. Putting the

focus on displaying as articulation work grounds the activity in the social, and guarantees that the displays will be situated in the context and relevant to the task. In contrast, many of the technological systems in the research literature are focused on the display as container, and as they are not grounded in a task, they end up as solutions looking for problems.

The second paper I would like to highlight is a paper about a system, but one that lives up to the standard set by Crabtree and colleagues. “Situated web signs and the ordering of social action” describes a field study of the RoomWizard system for managing meeting room bookings. Although web-based booking systems are already common, this system is different in that a touchscreen panel is also placed outside of every meeting room. I found both the system itself and the study that is reported here to be innovative and well designed. First, the thing that I like most about this system is that it is enormously wasteful in technology terms: an LCD flat panel outside of every room, *just* to say whether the room is in use or not. But this “waste” is invaluable in terms of displaying: by being dedicated to doing just one thing, the display allows people to gather the information “at-a-glance” (in Crabtree’s term) just as they do with the presence of mail in the house. This paper suggests that only when display technology becomes really cheap will we get the kind of social construction of displays as was seen with mail in the home, and the RoomWizard is a first step towards this situation.

Second, I like the fact that the paper describes a study of the use of the system, rather than being concerned with the system itself. There is thus a lot more space given to the social and interactional aspects that are only touched on in many of the other papers, and as a result, the paper contains a number of insightful observations. For example, people in the study started to casually notice and keep track of the displays, and through this lightweight information gathering were able to better maintain an awareness of people’s whereabouts in the office. This is interesting because it is a social mechanism that arises through a combination of the situated nature of the display (i.e., the information is available and located next to the room) and the technological characteristics of the display (i.e., the screen makes the room’s occupants more obvious than either a web or a paper booking interface). Another example concerns the relationship between visibility and accountability – the way that the public display affected people’s room-booking behaviour. By making room bookings more visible to passers by, it became more difficult for people to engage in “anti-social use of space” and led to a greater degree of self-policing than was seen with a (less visible) web or paper system.

These are just two of several interesting observations in this paper. Since the study is focused primarily on the way that the display is used, rather than how it was built, it provides much more insight into the ways that a shared

display can subtly change behaviour, interaction, and the ways that people carry out a task. It is an excellent example of how to study social and interactional aspects of shared display technologies, and I had hoped to see more like this in the collection.

I mention these two papers in particular, but there are also others that I found valuable: for example, “When a bed is not a bed” (Clarke et al.) is an interesting exploration of how a traditional shared display is used in a real work situation (a hospital ward); “Situated mobility” (Pering and Kozuch) introduced (at least to me) the idea of using fixed displays to support mobile workers; and “Designing displays for human connectedness” (Agamanolis) described several public displays designed for purely social purposes, which was useful in stretching my ideas about what shared displays could be used for.

In summary, this book is definitely worth reading for people working in the area: it provides a good overview of the kinds of work going on, and it contains several excellent papers. The problems I see in the book – that the sections are not strongly organized, and that most of the papers focus too little on social and interactional issues – are not fatal, and are a reflection of the current state of the field. Perhaps the most important contribution of the book is to highlight the gap between current systems-oriented research and the goal of understanding how public displays affect human interaction, and to provide some examples of how the next generation of display research should proceed.

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