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Understanding Gestures at Work

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INTRODUCTION

Our current studies are aimed at understanding gestures as used in the context of the workplace. Although there is a lot of existing research into gestures and how they arise in conversation, (e.g. MacNeill, 1985) these don't explore their use in work contexts. As a result there is little understanding of how to apply research on gestures to specific interface and information environment design problems.

Our aim has been to understand gestures *in-situ*, maintaining the rich inter-relationships between them, the people that produce them, and the environments in which they occur. Our motivation is to apply these understandings to designing forms of interface that use gesture, touch and physical manipulation in space.

The Gesture Ring

In a current project funded by a University of Queensland Small Grant (Brereton, Wyeth, Sutton, Docherty, Schultz, 2001) we have prototyped a simple gestural input appliance in the form of a wireless ring and watch that detects gestures from a restricted set, (10 gestures), while being self contained and not relying on external targets such as cameras or screens. Data is processed on-board and the result is transmitted wirelessly to other devices or applications. Our research on gesture will inform how the gesture ring can be deployed as part of a design solution.

PROCESS

We based our process on the Video Card Game, (Buur, Soendergaard 2000), which allows a group to extract meaningful information from video material quickly. The Video Card Game provided a participatory method to develop themes from video material through consensus amongst a group of ten.

Deepening our Understanding

After the video card game we made a more detailed analysis and description of the themes that had emerged. The products of this deepening process were one page summaries. The summaries followed a standard format, with an outline of the intent of the

theme, a list of descriptors, a brief speculation on possible implications for design, and a list of clips to watch for examples of the theme.

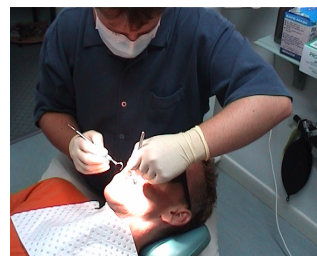
RESULTS

We now have ten well-defined themes. These emphasise gestures and/or incorporate observations of a variety of other phenomena, such as cooperative work, tool use, and modes of cognition.

As an example of our work, we present a video rendition of one of our themes, Gestures as Placeholders, which identifies how people use gestures as a way to bookmark information. This is especially apparent when people are trying to navigate a dense information space made up of visually similar repeated units, such as a public transport timetable. However, gestures are also used as placeholders for mental information (reminders of intention) and as temporal placeholders (marking a significant moment).

The importance of these types of gestures as a cognitive tool suggests that designs should work in synchrony with them or at least not constrain them. We see a partial realisation of the former in the use of a stylus with a PDA. However, while the keyboard and mouse have been replaced, the underlying interactional paradigm has not been improved from that of a desktop computer.

Designing for a Dentist



We are using the results of the video card game theme extraction and analysis process to design for the context of a dental surgery. This environment presents unique problems, such as sterility, that may be addressed by a gestural

input device. Traditional computer input devices, (mouse and keyboard) are impossible to sterilise. Dentists must themselves become non-sterile or relay their interactions through a non-sterile assistant in order to access their information systems. This introduces a bottleneck that frustrates the smooth flow of work in the surgery.

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