The Multidisciplinary Design Group in Vienna

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Overview

Where we come from
Hilda: computer science, PD, ethnography, coordination technologies
Ina: (nuclear) physics, science education (from social studies of science perspective), sociology of work, CSCW, PD

‣ Studies of work practices in health care
‣ Studies of design practice and development of supporting technologies
‣ Coordination technologies
‣ Gender studies
‣ Ethics

Who we (have) work(ed) with
Andrea Birbaumer (psychology)
Lisa Ehrenstrasser (product design)
Gammon (sound specialist)
Martin Kompast (education)
Valerie Maquil (computer science)
Kresimir Matcovic (computer science)
Thomas Psik (computer science)
Karin Schneider (computer science)
Wolfgang Spreicer (TUI design)
Marjo Rauhala (ethics)
Marianne Tolar (business informatics and sociology)
Mira Wagner (fine arts)
Work practices in Health Care

Research projects

- 1989-90 Small field studies in Austrian hospitals (‘Das computerisierte Krankenhaus’ (1991))
- 1990-91 Field studies of computer use in nursing (Austria, France)
- 1990-93 Time-planning in surgery (A)
- 1996 Field studies on the introduction of PACS (digital radiology) (A)
- 2002-05 Friendly restrooms for elderly people: ethical analysis (EU)
- 2004-07 ‘Action for Health’ (CAN): field studies in three oncology clinics, ethical analysis

Early key concepts/findings

- Qualitative analysis of temporal practices
- Spatial analysis of distributed work practices

Work practices in health care - oncology study

Research program

- Coordinative artifacts and practices
- Spatial arrangements of signs and artefacts
- Variability of work practices
- Comparative case studies
- Organizational and political issues
- Ethical analysis


Variability of work practices: ordering of patient flow

In the outpatient clinic of ONC1...
Patients arrive without previous appointment

**Care sheet**
- Lists all patient—related activities in the outpatient clinic in chronological order
- Documents in detail what is done from the nurses’ perspective – this is important in case the interventions deviate from the standard protocol
- Gives up to date information about future tasks, including additional physician orders....

In the outpatient clinic of ONC3...

**Appointment sheet**
- Provides date and purpose, lists diagnosis, past therapies, current measures...
- Central for the work of doctor, nurse, secretary, family doctor...

**List of appointments**
- Overview of oncology patients for a particular day
- Preparing work and distributing patients
- Communication at workplace (checking, annotating ...)
Spatial arrangements of signs, notations & conventions

**Trajectory sheet** (ONC2)
- List (matrix form), sequence
- Chemotherapies in ‘red’ with I., II. ... for cycle
- Add medication in ‘blue’ or ‘black’ with ‘Tg 1 3 5’
- Coloured stickers on backside for chemotherapies, blood transfusions, clinical study protocol

**Ward chart** (ONC1)
- Graphic space organized according to professional roles/responsibilities, priorities
- Colour for antibiotics (green), blood tests (red)
- Spatial layout - e.g. IVs upper half, other medication lower half

Research question:
Is there a ‘grammar’ of coordinative protocols that might be supported by computation techniques?
Migration/spatial arrangements of artefacts: piles and folders

**ONC1**

Patient folders are physically arranged in significant places (‘blood’, sofa in physician’s room ...)

- with their positioning indicating sequential order (of the patients to be seen), work load, specific task ...
- some with indicators of special arrangements (e.g. “pat.calls”)...
Variations ....

Spatial layout (outpatient and day clinic)
- ONC1: separate spaces, separate reception counters lab for quick blood tests
- ONC3: contiguous space, no lab for quick blood tests

Technical facilities
- ONC1: paper based oncology system - information distributed over several documents that have to be read together
- ONC3: computerized oncology system (paper-based patient records) - integrated information (e.g. appointment sheet)

Organization of work
- ONC1: doctor alone sees patient, patients arrive without appointment
- ONC3: teams of doctor and nurse see patient, patients arrive with appointment

Individual dispositions ....

Research question:
Which of these variations are ‘relevant’? - Issues of standardization
Sources of variability - ‘arena analysis’

**Design challenge** - configurability or customizability of global systems

Six case studies: ambulatory care (CAN); emergency clinics (CAN); oncology (A)

Design work as distributed collaborative work

Design work involves any mixture of
- Concurrent, sequential, and reciprocal action
- Partly co-located and partly spatially distributed
- Sometimes involving conversation and more often not
- With multiple actors interacting ‘through’ a collection of artefacts of various kinds

Moving perspective between...
- creative-conceptual work
- planning/developing/implementing

Ordering systems
- Consist of clusters of coordinative artefacts and practices
- Are instrumental in managing interdependencies that transcend local interactions

Design projects

**DESARTE**
Supporting work practice of (landscape) architects (1999-2001)

**ATELIER**
Mixed media environments for inspirational learning (2002-2004)

**IPCity**
Collaborative envisioning in urban renewal (2006-2011)

IPCity: Collaborative urban planning
MR-Tent with ColorTable

Tool/environment for collaborative planning and citizen participation, developed with participatory design methods and evaluated in the context of real urban projects.

Key features:
- Placing individual objects
- Connect objects with sound
- Placing rows of objects
- Manipulating objects
- Creating curved connections and flows
- Texturing the ground
- Painting on screen
- Adding paper sketches
- Switching views
- Rotating and zooming
- Saving and loading
Analyzing tangible and embodied interaction

Multimodal analysis of selected video material

- Gestures
- Object manipulations
- Visual and sound elements
- Different representations of site
- Use of space
- Collaborative aspects

Photographic 360° panoramas

Real-time video

Mobile video

Use of space

Research challenges:

Complexity of setting and task (participants co-constructing and debating urban scenes)

Multimodal analysis (qualitative/quantitative) as technique for evaluating a technology in use
Facilitating collaboration in urban projects

- Mobility of the MR-Tent
- Diversity of haptic elements (tokens, content cards, physical maps ....)
- Multiple representations of a site
- Types of content (3D abstract, 2D expressive, sound ...)
- Openness of technologies - an explicit step away from simulation tools
- Expansion of participants’ communicative resources - urban planners on ‘equal footing’ with citizens
And more research ....

- Understanding issues connected to distributed collaboration in complex work settings
- Understanding tangible embodied interaction, multimodality ...
- Building systems (tangible user interfaces)
- Home care technologies
- and more ...

MAPPER (EU)
Visual enterprise models in the car industry

![Diagram of visual enterprise models in the car industry]
Looking back - research strategy

- Small European country, big hard core computer science department
- Highly interdisciplinary - joint immersion in project work over some period of time
- Long-term immersion in a domain (or several domains)
- Strong design orientation
- Engagement in practices of participatory design - attention to technology use
- Being at the margins/border-crossing

(International) collaborations
Ellen Balka (Simon Fraser University, Canada)
Liam Bannon (University of Limerick, IRE)
Tone Bratteteig (University of Oslo, NO)
Pelle Ehn (Malmö School of Art and Communication, SE)
Giulio Jacucci (Alto University, FI)
Kari Kuutti (Oulu University, Fl)
Giorgio De Michelis (University of Milano-Bicocca, IT)
Dieter Schmalstieg (Graz University of Technology, A)
Kjeld Schmidt (Copenhagen Business School, DK)
Carla Simone (University of Milano-Bicocca, IT)
Jean-Jacques Terrin (Ecole nationale supérieure d’architecture de Versailles, F)

Collaboration with the institutes for architecture of the Academy of Fine Arts and the University of Applied Arts in Vienna
Collaboration with architect Rüdiger Lainer