THE PEA PROJECT – DESIGN STIMULUS

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ABSTRACT
Can a simple green legume, an ordinary garden pea, open up the field of design?
Can the humble pea help us to escape from 'defined methods' into another realm?
Can we discover in the palm of our own hands something about ourselves and in turn change the way we see the world around us?

Keywords
Reflective practice, creative thinking, phenomenological awareness, innovative teaching and learning practices, participative design studies.

WHAT IS THE PEA PROJECT?
The authors have successfully conducted the Pea Project with undergraduate industrial design students to stimulate creative thinking and reflective practice [1].

The Pea Project involves the adaptation of a series of successful and innovative teaching and learning practices that have had a significant, sometimes profound, effect on students. What begins with a rather bizarre - some might say eccentric - encounter with a pea develops into a deeply reflective experience.

The Pea Project consists of a number of complementary elements over the course of the conference. In our experience these elements generate participative elaboration and discussion of the themes that emerge.

The Pea Project directs the nascent designer to become self aware, to look at the overlooked and to connect with their surroundings [2].

It is our experience that this encourages designers to think more holistically and to engage in the practice of design at a deeper level. Furthermore it generates a deep sense of belonging to shared spaces and experiences, an essential characteristic for collaborative dynamics to be sustainable.

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THE PEA PROJECT PRECEDES DESIGN PRACTICE
Operating from constructivist [3] and phenomenological [4] perspectives, the Pea Project combines the banal and the everyday, with outcomes that are fundamental to the practice of design.

These outcomes relate to the development in the student of unforced awareness and a capacity for deeply reflective thought [1, 5, 6].

This workshop includes the creation, assembly and exhibition of photographic data captured during the conference; phenomenological encounters with, and responses to, this photographic *data*; and *responses to the responses*, emulating the layering and meta awareness of reflective entries in a journal.

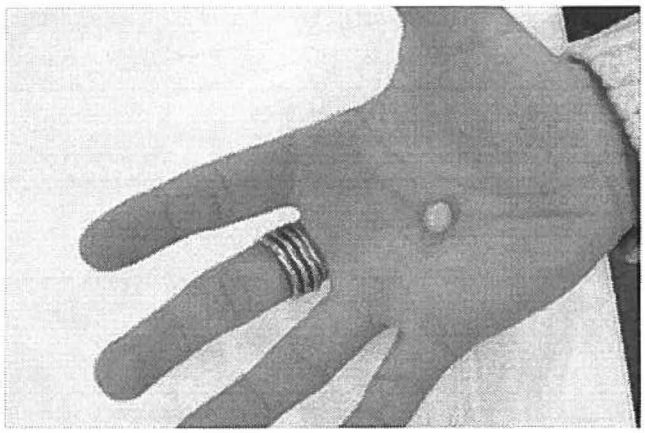

Figure 1 - Hand and Pea, 2001
Industrial Design, RMIT University

The Pea Project subtly and persistently demands that we venture beyond what we already know and understand, opening up and creating space for deep learning. This kind of thinking builds on the work of a broad range of educational theorists [7, 8, 9, 10, 11, 12, 13].

It is anticipated that our conference workshop will generate participative elaboration and discussion of the pedagogical themes.

THE PEA PROJECT – SUMMARY DESCRIPTION

Conference participants will be asked to take part in a reflective learning exercise. Each person will be approached during conference breaks and similar situations and asked to hold a pea while we take a digital photograph.

The Pea Project will *operate* over each of the three days of the conference, requiring one formal session on the second day;

- **day one** photographs and data collection;
- **day two** 60-90 minute experiential workshop;
- **day three** display of images and postcard responses.

We propose to experientially share with participants our innovative methods for stimulating phenomenological awareness, initiating and deepening reflective practices [5, 6, 14). We regard awareness and reflectiveness as foundational traits in developing and preparing designers for design practice.

At another level, we consider the process and outcomes of the Pea Project to be contemporary art – a work where the project participants become co-creators. France Morin [15] suggests "that artists have the capacity to make a lasting positive impact on peoples lives by helping them to see for themselves the dignity, beauty, and sacredness of the activities of their everyday life: the creative spirit, a powerful agent of transformation, that lies within everyone." The Pea Project aims to evoke this *creative spirit* in each and every participant.

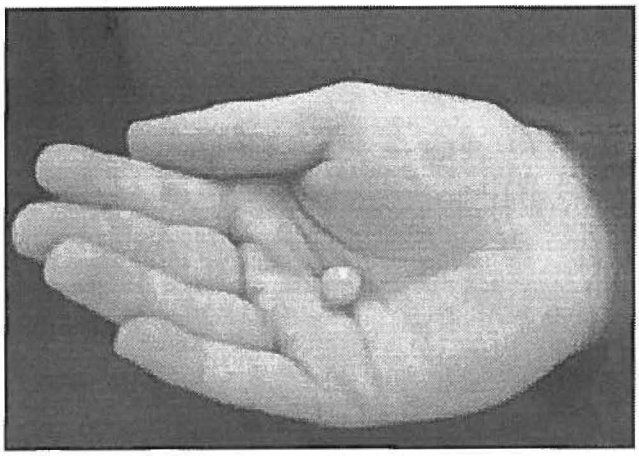

Figure 2 - Hand and Pea, 2001
Industrial Design, RMIT University

In keeping with Bachelard's [4] view that "the communicability of an unusual image is a fact of great ontological significance", the image of the participant's own hand holding a pea becomes the focus of attention.

Each participant will receive a postcard of a previously photographed hand (figure 2). On the back of the card will be two questions, *What did you see?* and *What is going on here?*, with space for participants to respond.

As everyone starts from an equally obscure and ambiguous place, outside the "rubber stamps of conventional clichés" [16], responses tend to reflect the unique qualities, interests and experiences of the respondents.

The photographs and the completed cards will be presented and discussed at the subsequent workshop on the second day. The first part of the workshop will be presented in darkness, with a projection of the many hands and peas. Each hand and pea will be the focus of attention for a few seconds. This will be followed by a quicker projection of the images to promote a sense of the hands as a collective and to establish a sense of diversity and difference. Some participants are expected to experience a sense of reverie; others may see their hand as if for the first time or become aware of the shape of their own perception [17].

At the end of the PowerPoint presentation, with the lights back on, participants will be asked to reflect on the process, of which they have been part, and to again respond to the two simple questions *What did you see?* and *What is going on here?*. The combination of the quiet, darkened room and the call for reflection is anticipated to create a deeply thoughtful personal space.

This approach should create the conditions necessary for sharing experiences and personal responses to the combination of the hand, the pea and also the approach adopted. It is these responses that become the focus of discussion in the workshop. In a teaching and learning setting participants experience a range of responses that are as diverse as the hands depicted.

The combination of pea and hand, in particular the personal experience of being engaged in the process, stimulates multiple points of departure with shifts in figure-ground relationships and the emergence of personal projections. The material thus generated and recorded can act as a further stimulus to deeply self-reflective loops of engagement. Personal responses to the pea and hand encounter are expected to persist beyond the boundaries of the conference, opening up "zones of possibility for intellect and imagination." [18]

When the images and responses are displayed as a *collection* it becomes possible to see a diversity of ideas as well as common themes and overlaps in ways of seeing. The responses of others may also set off a further round of reflective engagement.

If the *quality* of images captured is consistent with previous efforts the collection of hands will be aesthetically pleasing - the images, particularly when projected, will be visually arresting and quite mesmerizing. Valerie Cassell [19], curator and director of the visiting Artists Program at the School of the Art Institute Chicago believes "that

contemporary art has the potential to play an integral role in society by opening up spaces in which individuals may reexamine their own lives and their relationship to the world." For this reason, space permitting, we propose to continuously project the images captured in a preset sequence, in an automated PowerPoint presentation in a darkened room at the conference venue. Those attendees who have not been part of other aspects of the Pea Project will at least have some sense of the initial presentation.

Following the workshop the photographs and completed cards will be displayed for the conference participants to view, read and reflect upon. A second postcard will be available to allow participants to respond to the collection. These cards will be displayed alongside the original images, creating a dynamic and reflective forum. The Pea Project is endlessly extensible with many potential points of departure. We are sure others will adapt the idea of using digital images, postcards and simple everyday objects in ways we can barely imagine.

REFERENCES

1. Schon, D. *Educating the Reflective Practitioner,* Jossey Bass, San Francisco, 1987.
2. Munari, B. *Design as Art,* Penguin Books Ltd., Harmondsworth, 1966.
3. Barry, D. *Qualitative Inquiry 2*, 1996, 411-438
4. Bachelard, G. *The Poetics of Space,* Beacon Press, Boston, 1969.
5. Schon, D. *The Reflective Practitioner - How Professionals Think,* Temple Smith, London, 1983.
6. Kolb, D. *Experiential Learning: Experience as the Source of Learning and Development,* Prentice Hall, Englewood Cliffs, 1984.
7. Bilimoria, D. A new scholarship of teaching and learning: An agenda for management education scholarship, *Journal of Management Education*, Thousand Oaks, (Dec 2000).
8. Grumet, M. Curriculum and the art of daily life, *Reflections from the heart of educational inquiry: understanding curriculum and teaching through the arts*, Albany Press, Albany, 1991, 74-89.
9. Gunter, P.A.Y., D.C. Bergson's Philosophy of Education, *Educational Theory 45,* 1, 1995.
10. Hooks, B. *Teaching to Transgress, Education as the Practice of Freedom*, Routledge, New York, 1994.
11. Eisner, E.W. What Artistically Crafted Research Can Help Us Understand About Schools, *Educational Theory 45,* 1, 1995.
12. Giroux, H.A., McLaren, P. *Critical Pedagogy, the State and Cultural Struggle*, State University of New York Press, Albany, 1989.
13. Jipson, J.A., Paley, N. *Daredevil Research - Re-creating Analytic Practice*, Peter Lang Publishing, Inc., New York, 1997.
14. Collier, S. T. Characteristics of reflective thought during the student teaching experience, *Journal of Teacher Education 50*, 3, 1999, 173-181.
15. Morin, F. The Quiet In The Land: Resistance And Healing Through Art, *Art Journal 59,* 1, 2000, 8-10.
16. Schachtel, E. *Metamorphosis,* Basic Books, New York, 1959.
17. Weschler, L. *Seeing is Forgetting the Name of the Thing One Sees*, University of California Press, Berkeley and Los Angeles, 1982.
18. Jipson, J.A., Paley, N. *Daredevil Research - Re-creating Analytic Practice*, Peter Lang Publishing, Inc., New York, 1997.
19. Cassel, V. Cry of my birth, *Art Journal 59*, 1 (Spring 2000), p. 4-7.

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AUTHORS' BACKGROUNDS

The three authors are members of *project-mu*, an interdisciplinary research team housed at the Interactive Information Institute at RMIT University, Australia.

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Barch Hons - Politecnico di Milano; PhD RMIT (current)
Lecturer and coordinator of Design Studies in the Industrial Design department, RMIT University, Australia. Main interests/skills include: Socio-technical issues related to Design (including studies on synaesthesia, semiotics, and usability); user-centred design (in particular applied to the design of Information Technologies); constructivist learning and teaching approaches; design of Product-Service Systems; design of collaborative work environments (includeing virtual work spaces); Multi-disciplinary research methodologies and dynamics.

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Over 20 years work experience in management and project management roles for Australia Post. Currently provides consultant and research services to a number of organizations including the Australian Army, Australia Post and Deakin University. Research focus relates to the use of art, images and visual media in management education. Key interests include: the practice of management, the study of everyday practices; organizational culture; anthropology; ethnography; art; visual media; art history/theory; political theory; spreadsheet modeling; teaching and learning; philosophy.

Michael Coburn

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Experience in building e-commerce solutions using a range of software technologies. In particular build-ing sites with streaming and interactive content. Familiar with AI methodologies including, but not limited to, agent based systems. This can manifest itself as agent-based personalisation for web pages. Experience in conducting requirements analysis and producing software specifications for software projects of varying levels of complexity. Research interests include: self-organising, self-assembling, self-similar entities, including nano-structures both in the physical and abstract domains; Human Factors, and how this discipline can inform industrial and user interface design.

Participatory Design of Information/Communications Infrastructures

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ABSTRACT
This describes a two-part workshop on the participatory design of information/communications infrastructures. Participants are invited to share and reflect on their participatory design experiences in light of recurring issues of infrastructure development.

WORKSHOP THEMES
Public participation in the development of information/ communications infrastructures is both necessary and extraordinarily challenging.

Information/communications infrastructures come in many forms. The concept is broad, encompassing community networks, national ID schemes, privacy regulations, broadband networks, accessibility policies, classification schemes, network protocols, public kiosks, as well as many other services and facilities we tend to take for granted once developed. The unifying idea is that infrastructures should be widely available and useful for a variety of public interest purposes. To work well they need to be readily at hand to fit a wide range of everyday tasks, yet be largely out of sight and mind when not needed so they don't get in the way. The desiderata for good infrastructures pose contradictory implications for design. On the one hand, for them to fit well with the way people live they need to be adapted through many iterations of trial and refinement by their users. Also, since they are needed for everyday life, people have a vital stake in their development and hence a right to be heard in their design. On the other hand, the inherent features of infrastructure pose severe challenges to effective participation of their users (and citizens generally) in their creation and maintenance. Information/ communications infrastructures typically are large, distributed, expensive and complex. In their crucial formative stages, those few with a strong financial interest enjoy disproportionate influence in their development. Once infrastructures are established, their desired invisibility then discourages careful attention to refinement and maintenance, until the breakdowns become widespread and seemingly intractable. Their inherent unwieldiness discourages the long-term engagement necessary to accomplish significant improvements. Many people have a stake but in differing ways, so consensus is hard to achieve, particularly when participation is broadly based.

But this paints too bleak a picture. It is important to observe that some very good infrastructures have been developed, reflecting the artfully integrated diverse contributions of many people. How has this been achieved? Each particular infrastructure development offers its own set of opportunities and constraints that may be exploited. How can we learn to read these situations and find effective ways to engage with others in developing infrastructures that work well for as many people as possible, and that can evolve as needs shift? These are the central questions this workshop explores.

GOALS
The main purpose of this workshop is to enable people who are actively concerned with some form of information/ communications infrastructure development to get to know each other better and learn from each other's experiences. This will be done through the first-hand reporting of personal experiences in attempts at developing infrastructure and collective writing of a synthesis report.

METHOD
Discussions will be based on a report from the first part of the workshop, conducted at the Directions in Advanced Computing (DIAC) conference (Seattle, May 17, 2002) and on presentation of short position statements submitted in advance. On-site participants, to a maximum workshop size of 15, will also be invited to contribute their experiences.

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Creating, Sharing and Using Collections of PD Procedures

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GOALS & OBJECTIVES

The workshop is meant to serve for exchange about ideas for and experiences with collections of PD procedures.

Topics include the selection of relevant procedures, possible distribution channels and the interactive use and enhancement.

It is intended to use the results of the workshop as a basis for the design of a web-based interactive collection of PD procedures. We invite interested practitioners and researchers to participate in this process.

Issues and questions that could be addressed in the workshop are:

- Which procedures should be included into the collection? How can the range and scope of procedures be defined?
- What are the target groups of people potentially availing the procedures for themselves? How can the target groups be defined?
- How should the procedures be accessible? Which channels are suited and should be provided?
- How can the channel be designed so that it allows for a dynamic and interactive use and a process of continued discussion and improvement of the collection?
- What is it like to use collections of PD procedures? What are the experiences participants have in using collections of PD procedures?
- How can collections of PD procedures inspire or guide real-life PD processes?
- How can the procedures that are used in the process be selected from the collection?
- How can the actual experiences with the procedures be fed back into the collection?

TARGET GROUPS OF THE WORKSHOP

We would like to bring together

- potential and actual users / consumers of collections of PD procedures,
- potential and actual designers of collections of PD procedures and
- potential and actual designers of publication channels for collections of PD procedures.

WORKSHOP ORGANISERS

Bettina Törpel
has worked in practice oriented research projects on collaborative organizational and technological infrastructures for fragmented work environments. She is especially interested in PD methods for clarifying and negotiating interests. Currently she works as a researcher at the Fraunhofer Institute for Applied Information Technology (former German National Research Center for Information Technology).

Steffen Budweg
had worked as web application developer and online strategist. Currently he finishes his degree in Communication and Media Sciences and has worked as a research assistant at the Fraunhofer Institute for Applied Information Technology (former German National Research Center for Information Technology).

The Website of this workshop is:
http://orgwis.gmd.de/~budweg/ws-pdc2002

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Working on sorting things in—and out: real-world complexity meets computer formalisms

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Information systems development makes use of a variety of methodologies for understanding work practices. Each of the methodologies emphasizes a particular set of work characteristics and thus results in one particular representation of the work. Many of the methodologies result in representations that make design easier, emphasizing formalizations and selection of aspects relevant to information systems developers. Members of the participatory design community claim that developers need to work with users in order to develop a rich picture of their work practices, and to preserve the many interests users may have in the information system. Systems development therefore should aim to design a variety of representations of work. Handling a multitude of interests may not make design easier or more straightforward, but the resulting information system will be better and better fit the work.

In this workshop we want to discuss the work that systems developers do in order to understand users' work practices. We want to discuss systems analysis as work on the relation between the rich complexity of somebody's work and the simplified, formal, machine-oriented specifications of a computer system (which results from systems development analysis). Engineering-oriented methodologies handle this contradiction by reducing complexity through formalizations and simplifications; by applying a particular perspective through the use of specialised languages and methods. Participatory design preserves the complexity and uncertainty until the problem-definition has been made? by users and developers together. The solution of the defined problem is then subject to the necessary simplifications and formalizations. (And what happens to participation in these phases?). When we carry out an analysis we choose what to emphasize? and not to emphasize; we can only represent some aspects of the world. In systems development the selection and representation of a set of characteristics of the world is done in the context of computer design, based on what computers can do. Analysis thus means abstracting, quantifying, classifying, standardising, building hierarchies, and simplifying into formal representations that? in the end? can be executed by a computing machine. We want to discuss where formalisms and real world complexity meet? can we find better ways of handling the contradictions between these different "logics"?

In the workshop we want to pay special attention to contributions to this discussion from feminist researchers, offering a critical approach towards existing foundations of technology; methodological and conceptual issues, from feminist perspectives. Feminist researchers especially contributed to understanding the mutually dependent processes of shaping technology and politics (including gender). In the workshop we want to emphasise how information technology, politics and gender construct and are constructed in negotiations about borders and content, about metaphors and categories, about what is represented and not. The workshop is an activity within the Nordic-Baltic research network on "Information technology, transnational democracy and gender (ITTDG)"

FORMAT

Introductions by the organizer and some invited participants will open the workshop discussion:

Christina Mörtberg, Inst. of Gender and Technology, Univ. of Luleå, Sweden (dir. of ITTDG)

Joan Greenbaum, City Univ. of New York

Judith Gregory, Department of Informatics, Univ. of Oslo

Pirjo Elovaara, Blekinge Institute of Technology, Technoscience Studies

The workshop will include discussions and exchange of experiences with design or representations. Some examples of designs will be used to make the discussions more concrete. Workshop participants should be familiar with design and/or feminist critiques of technology and science.

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Training the Bull *in* the China Shop – or *Outside*? New Student Exercises for Participatory Design

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WORKSHOP AIM

Organising collaboration is an important part of the participatory design competence. Most university programmes that teach participatory design rely on student design projects to establish this skill. Students try out methods by studying people at work in the local community and by involving them in design activities. But isn't this trying to train the bull in the china shop? Are there ways of providing students with hands-on experience in safe environments before they go out and try out their new social skills with 'real' people?

The aim of this workshop is to create an opportunity for teachers of participatory design to get peer review of design didactic issues concerning participatory design: How does one teach how to create collaborative participatory design sessions? Based on hands-on experience with selected student exercises we will seek to establish criteria for a repertoire of suitable exercises.

AUDIENCE

This workshop is targeted at experienced teachers of participatory design.

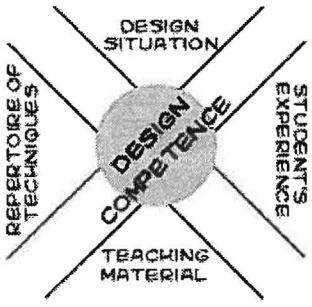

Fig 1. Design competence develops in the tension between design situation and teaching material, repertoire of techniques and student's experience

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INQUIRING INTO DESIGN EDUCATION

The workshop is designed as an inquiry into the practice of teaching participatory design. How can we make sure that students have reached an appropriate level of participatory design competence before exposed to the challenge of real life design projects? Designers practicing participatory design are often 'lonely cowboys' in their organisations. This puts high demands on their abilities to organise and facilitate collaboration. According to our experience learning by doing through projects with users may not be the best way to gain first time experience of practice. And to establish a reflective practice [Schön 1987] requires repetitive training.

As a starting point for this inquiry into participatory design didactics we will propose a simple model of design competence development. It takes the competence to sit at the crossroads of repertoire, experience, teaching material and situation sensitivity, Fig. 1.

We take 'repertoire' as a set of techniques for interacting with materials and users/clients. 'Experience' is the design apprentice's learning through hands on activity - in Dewey's term 'undergoing of consequences' of some trying [Dewey 1966]. Teaching material is cases, textbook material, site visits, video clips and materials from user sites. 'Situation' is a concrete instance in a given design project of people, time, space etc. Design competence arises from the actual blend of these four.

SINK OR SWIM PROJECTS?

The following three stories may give an idea of the kind of problems that motivates a peer discussion of design didactics. They describe problem situations we have ourselves encountered and which we think should be addressed in some way through teaching prior to actual participatory design project work:'

(1) Two students Ann and Sue conduct a future workshop with middle-aged blue-collar workers. Despite careful preparation and well-motivated users, they find that the users hardly talk to them - being young academic women - but rather to an engineer who also happens to be there. Is it

impossible for young women to organize user workshops in male dominated communities? How should they organize user communication?

(2) A graduate student Bob experiments with photography as a means for data collection and work practice analysis. However, in his final workshop, where workers are exposed to his photo material, he finds that they hardly make use of his photos: *"They just talked about other work situations without paying attention to the pictures I presented"*. Bob concludes that the method is weak due to the workers lack of ability to reflect on their action. Is he right?

(3) Three students start a project on designing a heating control panel. The university has established contact with a local manufacturer, but upon visiting the company, the students get frustrated to find out that there are quite different opinions on what the goal of the project is: The company wants them to usability test one of their concepts, the professor encourages them to do user studies and scenarios, and they themselves mostly want to invent cool stuff. Who is right? And who has the responsibility to negotiate?

Apart from the pedagogical problem in student's finding out about collaboration problems the 'hard way', there is also the ethical problem of involving companies and users in activities that are likely to go wrong because the students haven't yet acquired the social capability of organizing collaboration.

DESIGN EXERCISES BETWEEN LECTURES AND PROJECTS

The authors have experimented with student exercises in the void between lectures and real life design projects. Our attempts to nourish design competence in a 'safe' environment have brought up a number of interesting approaches to design training:

Game playing – Students get the chance to establish a design process vocabulary in a game frame. Further more brick games serve as a test-bed for experimenting with approaches to collaborative design [Harbraken 1987; Binder et.al. 1999].

Interpreting images – Students learn to reflect on traits of a situation by means of picture or video documentary. Pictures and video act as open resources for students' learning [Buur et.al. 2000].

Facilitation training – Students organise internal workshops with researchers and fellow students to get hands-on experience with the challenges of facilitating a collaborative practice.

Appreciative inquiry – Students learn appreciative inquiry techniques as a way of communicating during the design process putting focus on the possibilities of the situation rather than constraints [Cooperrider and Srivasta 1987; Hammond 1996].

DISCUSSION BASED ON HANDS-ON EXPERIENCE

We plan the workshop to be highly interactive organized around what we take as key elements in the repertoire of designers occupied with participatory design. Participants are invited to share experiences from their own teaching practice and suggest successful examples of student exercises.

To provide grounding for the discussion we encourage participants to try their hands on some of the exercises during the workshop.

WORKSHOP PROGRAM

Introduction: The organizers introduce the theme and participants present themselves

Silent Game: Through brick games in small groups we focus our attention on the collaborative aspects of design and discuss a concrete student exercise example.

Wall of exercises: Participants briefly describe examples of teaching activities from their own practice and decorate a wall with exercises.

Trying out: In groups participants select 1-2 student exercises, try them out and discuss their merits. The organizers will introduce a simple evaluation form to focus the discussion on the value of the exercises in terms of participatory design competence and design didactics.

Wrap-up discussion: Towards the end of the workshop the groups present their observations for general discussion. We make an attempt to formulate criteria for good student exercises in participatory design.

ORGANISERS

Ole Iversen is a Ph.D candidate at Department of Computer Science. His research embodies design educational issues as well as attempts to expand the field of participatory design into designing with children.

Jacob Buur is a mechatronic engineer. He is professor of User Centred Design and manager of the Danfoss UCD group. His research includes product development processes and interaction design in industrial environments.

Ellen Christiansen is associate professor teaching Human-Computer Interaction. Currently her research is carried out at the Center for New Ways of Working, http://www.nwow.alexandra.dk/, targeting empirical and theoretical inquiries into knowledge-based systems in flexible work settings.

Arne Kjær combined a computer science background with cultural sociology. He is associate professor at Information Studies and head of the study program committee. His research includes design and learning issues.

REFERENCES

Binder, T; Buur, J; Kukla, C. and Porter, W. (1999): Innovation in Design: Strategies for designing together. Tutorial at Computer Human Interaction Conference (CHI99), Pittsburgh.

Buur, J; Binder, T. and Øritsland, T.A: Reflecting on Design Practice: Exploring Video of Designers in Action. Workshop at Designing Interactive Systems Conference, ACM, New York 2000.

Cooperrider, D.L., Srivastva, S.: Appreciative Inquiry in Organizational Life, in: Research in Organizational Change and Development, 1987, vol. 1

Dewey,J.: Democracy and Education. The Free Press 1966

Hammond, S.A.: The Thin Book of Appreciative Inquiry, Kodiak Consulting, 1996

Harbraken N.J. & Gross M.D: A report submitted to the National Science Foundation, Engineering Directorate, Design Methodology Program, Dept. of Architecture, MIT, Cambridge, Massachusetts, 1987

Schön D.A. (1987): Educating the Reflective Practitioner, Basic Books, New York.

Interactive Spatial Design - Using Images to Communicate Qualities

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WORKSHOP QUESTIONS AND INTENDED PARTICIPANTS

Intended participants are researchers and practitioners interested in the problems of how to set up multi competence collaborative design environment within the architectural domain. How can you establish a common ground for dialogue and provide tools, which can help describe the qualities that you want to achieve? How can new digital tools be facilitated in these design environments?

Maximum number of participants = 16

BACKGROUND

The process of designing new modern workplaces is more challenging than ever, and new ways of working are needed in order to overcome these challenges. The challenges are rooted in the fact that today's companies have to operate in societies in rapid and continuous change where the introduction of new, better and faster technologies together with the increasing international competition calls for business concepts, employees and workplaces that fast can react on these changes. As technology becomes an increasing part of the activities carried out at work innovative workplace design is no longer just a question of architecture in the sense of spatial arrangement and furniture. Instead of a linear and successive design process we argue for a collaborative process that simultaneously take into account the physical space, the furniture, the technological support and the activities that are going to take place within the workplace. Such a design process is difficult to carry out, as it requires that people who have competencies within various fields work together on the same design task.

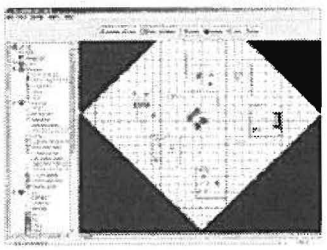
COMMUNICATE QUALITIES WITH IMAGES

There are a number of problematic aspects regarding design processes with collaborative elements. In workplace design, the planning process involves many actors from different parts of an organisation with a variety of perspectives, experiences and knowledge. A commission dealing with spatial changes is often initially vague. Unclear notions easily allow themselves to be caught up in the verbal language, while a physical design demands firmer representation. From this perspective, you can regard the process of designing as a transition from a diffuse sphere of concepts towards a sphere of concepts of more concrete character. An abrupt transition from the verbal formulations of those commissioning to the architect's graphic representations may hinder or be the reason why the participants are not able to develop their own comprehensible images and visions. In order to compensate for this shortage, as a complement to the spoken language, Saddek Rehal has proposed that one uses images or pictures to discuss aspects or phenomena considered to be important for the design situation in question. In this manner, the dialogue is able to enhance the notions of those participating, provide a richer content for the commission and a good point of departure for a stimulating dialogue with the architect.

INTERACTIVE DESIGN TOOL

Peter Fröst is a member of a research group that has developed a working prototype for an interactive design tool, to be used in collaborative architectural design processes.

Fig 1. FSD "game board"



The prototype is an extremely "easy to use" digital modelling tool, called "ForeSite Designer" (FSD). FSD enables the users to build spatial worlds of prefabricated components on a building site in 2D on the computer

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screen. With a single mouse click FSD exports the 2D layout to a lit-up 3D/Virtual Reality world in the computer game "Half-Life." The idea is to work with 2D images that one can freely choose, combine, copy and arrange in many different ways. In this way you are invited to collaboratively work together with building an environment. The images can represent a wide variety of different elements according to the possibilities in a modern computer game. It can be physical building elements as walls, windows, furniture etc but also entities as images, sound, animated textures, text, persons with pre-programmed behaviour etc.

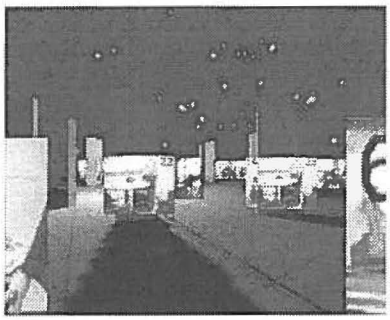


Figure 2. Walking around among images

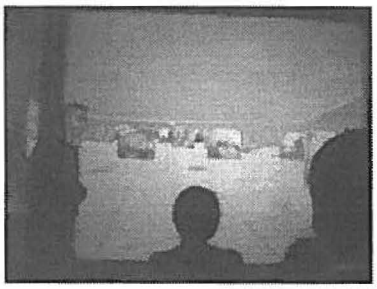
FSD is developed and optimised for the use of unskilled persons who has limited time to learn and use the design tool. FSD is in accordance with this purposely made very simple to use, and it can provide untrained, non-professional participants with a tool for rapid interactive designing and evaluating ideas in collaborative settings.

GOAL AND OBJECTIVE OF THE WORKSHOP

The goal of the workshop is to design and build a virtual space connected to certain defined qualities. The use of images and their relation to spatial qualities will be investigated. The participants will be divided into cross groups, with the assignment to design a space for work where collaboration and creative work can be supported. That also means to present a story within a collectively predefined theme, and design a spatial solution for that story. The groups will try the ForeSite Designer interactive tool to visualize their ideas. They will be equipped with a set of images and simple building components. The virtual world building will be circulated within the group so that all participants can try "hands-on".

After this a presentation will be carried out on a large screen display. The persons who present will be placed in front of a large projection of the virtual spaces they just have modelled. They are then able to immediately interact with a Virtual Reality world in scale 1:1 of the image scenario they just have designed. They can navigate around freely in the world and show the rest of the participants all the arrangements and where they had placed and integrated images in their worlds. The last event in the workshop will be an evaluating discussion where everybody will be given the possibility to comment on what they had experienced during the workshop.

Figure 3. Presentation to the audience



Agenda

Duration	**Activity**
0,5 hour	Introduction, task definition
1,5 hour	Group discussions and "hands-on" building of virtual environments
0,5 hour	Large screen presentation of actually built solutions
0,5 hour	Evaluating discussion

ORGANISERS

Peter Fröst, Architect and Researcher: - In our research group at the Interactive Institute in Sweden, we have during the last year been working with the challenge to design design-processes in architecture that involves users and a manifold of different stakeholders in joint design commissions. Focusing on workplace design our goal is to develop a design process that integrates today's complex and fast changing conditions and the bouquet of multi disciplinary partners who are engaged in the work to shape the modern workplace. My own research is primarily focused on developing and integrating advanced visualization technology into these design environments by application of digital tools such as 3D modelling and Virtual Reality.

Saddek Rehal, Architect and Researcher, Innovative Design at Chalmers University of Technology. My research focuses on the communication between design actors from different part within a company organisation involved in workspace design. The goal is the development of a method and tool for communication between participants in the early stages of design processes. I propose the use of pictures in order to increase the possibility for the participants to reflect and articulate qualities that are difficult to describe with only common language.

Symmetry of Ignorance and Informed Participation

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Analyzing the Synergy of Related, But Different Approaches to Participatory Design of three Research Centers

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INTRODUCTION

The field of participatory design grew out of work beginning in the early 1970s in Norway, when computer professionals worked with members of unions to enable the workers to have more influence on the design and introduction of computer systems into the workplace.

Participatory Design (PD) is considered, understood, and practiced as a set of diverse ways of thinking, planning, and acting through which people make their work, technologies, and social institutions more responsive to human needs.

The wide-spread use of computers and the emergence of the Internet have opened new challenges for PD transcending the initial focus of *information system design* toward a broad range of digital technology including *web-based, mobile, ubiquitous and new media environments.*

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OBJECTIVES

The workshop will explore the further broadening of the concept of participatory design beyond information system and digital technology design to collaborative work and collaborative learning. This will be done by describing, discussing, and contrasting the work of three major research centers. These researchers centers

- *share some common basic beliefs and objectives* (e.g. with regards to participation, learning, and democracy),
- but they also have *their own identity and focus* (e.g. with regards to work, technology, and art).

The workshop will explore the synergy resulting from a comparison and integration of these different research perspectives and objectives.

METHODS FOR MAKING THE WORKSHOP INTERACTIVE WITH THE PARTICIPANTS

Our methods will include the following:

- articulate and define controversial issues by contrasting the three approaches;
- use of a discussant to further identify the controversial issues as a foundation for discussion;
- let the members of the audience associate themselves with a particular research direction and argue for its respective strengths and weaknesses; and
- create jointly a synergy of the different approaches.

RELEVANT BACKGROUND OF THE ORGANIZERS

School of Arts and Communication, Malmö University (Pelle Ehn)

In 1998, a number of researchers and teachers, several of whom with extensive research experience from and a long standing commitment to the idea of participatory design, came together to form a new school and studio based research center oriented towards the design of digital media and artifacts. Our vision for the new 'Digital Bauhaus' was instantiated at Beijerskajen 8 in Malmö in close cooperation between the School of Arts and Communication and the Interactive Institute. As the Bauhaus from the 1920s the vision was a program for the design of artifacts based on progressive social and cultural values, artifacts designed to engender social change. The Manifesto for this 'Digital Bauhaus' envisioned a critical and creative aesthetic-technical production orientation that unites modern information and communication technology with design, art, culture and society; and at the same time places the development of the new mediating technologies in their real everyday context of changes in lifestyle, work and leisure. The research studios at the institute and at the school have a focus on digital technologies in relation to space, narrative and creative environments, and art.

More information about the work in the research studios and at the school can be found at:

- about the vision: Ehn, P. "Manifesto for a Digital Bauhaus" in Digital Creativity, vol. 9 no. 4 , 1998.
- about the space and virtuality studio: http://space.interactiveinstitute.se
- about the narrativity and communication studio: http://narrativity.interactiveinstitute.se
- about the creative environments studio: http://www.creativeenvironments.mah.se
- about the shift program: http://www.skiften.com

Center for Activity Theory and Developmental Work Research, University of Helsinki (Yrjö Engeström, Jaakko Virkkunen)

The Center for Activity Theory and Developmental Work Research was established in 1994 to conduct research in work, technology and organizations going through transformations. The establishment of the Center was a turning point in the development of the methodology of developmental work research (DWR) that had been going on already for about ten years. The methodology is based on the cultural-historical activity theory (CHAT) that stresses the culturally mediated, historically evolving and layered nature of human activity as well as the related idea of expansive learning. The methodology relies on interventions aimed at helping practitioners analyze and redesign their activity systems. In these interventions the practitioners and the researchers identify with the help of empirical data (e.g. video excerpts) important recurring disturbances and ruptures in the collaborative activity, as well as local innovative deviations from the standard practice. Collaboratively they analyze and model the historical and systemic causes of the disturbances as inner contradictions of the system of joint activity using conceptual models of activity theory and expansive learning theory. On the basis of this analysis, an expansive solution to the contradictions is created and implemented experimentally so as to create a historically new form of the activity. The methodology was first applied to single activity systems. Recently, the developmental processes have increasingly dealt with networks of activity systems. The Change Laboratory is a new method for carrying out developmental work research in a condensed form. The methodology has been applied in various fields of activity such as schools, hospitals, service organizations and industry as well as in various kinds of transformations.

For more information about the Center and the approach see

- http://www.edu.helsinki.fi/activity/
- http://communication.ucsd.edu/MCA/Paper/Engestrom/expanding/toc.htm

Center for LifeLong Learning and Design (L^3D), CU-Boulder (Gerhard Fischer)

The Center for LifeLong Learning and Design (L^3D) has contributed over the last fifteen years to a co-evolutionary approach between (1) a new understanding of thinking, working, teaching, learning, and collaborating, (2) the development of new media, and (3) the change and evolution of institutions (schools, universities, and workplaces). We have developed a number of innovative technologies such as domain-oriented design environments, critiquing systems, and organizational memories.

Recent research efforts in L^3D have focused on social creativity and meta-design in lifelong learning communities. The approach is grounded in the belief that human creativity arises from activities that take place in a social

context where interaction with other people and the artifacts that embody group knowledge are important contributors to the process. We have developed and evaluated new socio-technical environments, such as the Envisionment and Discovery Collaboratory and Living Organizational Memory that allow all stakeholders to engage in *informed participation*, exploit the symmetry of ignorance as a source for creating new knowledge, and attempt to create shared understanding among stakeholders with the incremental development of boundary objects.

More information the Center's work can be found at:

- about the Center itself: http://www.cs.colorado.edu/~l3d/
- about the Envisionment and Discovery Collaboratory: http://www.cs.colorado.edu/~l3d/systems/EDC/ and Fischer, G., E. Arias, H. Eden, A. Gorman, and E. Scharff (2000): "Transcending the Individual Human Mind — Creating Shared Understanding through Collaborative Design", ACM Transaction on Computer-Human Interaction (TOCHI) Vol. 7, No. 1, March 2000, pp. 84 -113. [http://www.cs.colorado.edu/~gerhard/papers/tochi2000.pdf]
- about the enTWIne research grant on "Social Creativity and Meta-Design in Lifelong Learning Communities": http://www.cs.colorado.edu/~l3d/entwine/ and Fischer, G. (2001): "External and shareable artifacts as opportunities for social creativity in communities of interest", in J. S. Gero and M. L. Maher (eds), Computational and Cognitive Models of Creative Design V, Key Centre of Design Computing and Cognition, University of Sydney, pp. 67-89. at [http://www.cs.colorado.edu/~gerhard/papers/ccmcd2001.pdf]

INTENDED PARTICIPANTS

We would like to attract participants with very different backgrounds in order to exploit the symmetry of ignorance and engage them in informed participation grounded in their respective background:

- researchers and practitioners;
- designers and people who study work processes and evaluate the usabability / usefulness of new media and new technologies; and
- people who come from different countries representing different cultural values.

Visual construction

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ABSTRACT
The idea behind Visual Construction, VC, is derived from a use of visual material in participatory design. The use of VC is a natural development of the qualitative user-centred design tradition. We wish to address the potential of visual anthropology within the boundaries of participatory design. Furthermore it is necessary with an explanation of the potential of the 'picture' – hereby meaning the visual material we have worked with e.g. the photograph, stills, art and sketches. With a correct understanding and use of pictures, it can function as a building bridge between the designer and a user. The interpretation and use of different pictures facilitates a context-awareness that can help to minimize the gap between the user and the designer. The goal for VC is to extend the field of participatory design with a visual anthropological perspective and to introduce a use of the picture, that will extend cultural-awareness of the designer.

Keywords
Visual Anthropology, cultural visualization, qualitative interviewing, visualization in design, cultural awareness.

INTRODUCTION
The VC method is developed from the notion of the communicative potential in visual material – in our case, 2-dimensional pictures. When encountering a new context, it is necessary for the designer/researcher to get a grasp of the context/culture. The traditional way of conducting this is by the use of observation and several interviews.

By making the users/participants construct a presentation poster with the use of pictures, you create a form of narration, which provides the designer with a unique insight of a given context. The context is visualized by the users in the construction and discussion of the narration they construct with the means of the visual material.

There is a crucial point in the sense of construction. The necessity for control is almost absent. It is the inspiration and potential for interpretation, within the picture, that guides and controls the interview. In this way, it is the user who controls the fluctuation of the interview. The VC method provides a forum for a continuous discussion and reflec-tion, which is a result of the potential for interpretation provided by the visual material. The method of Visual Construction provides the means for a construction, rather than the re-constructing often found in the traditional verbal interview.

THE METHOD IN BASIS
On the basis of an initial interview the researcher/designer creates or chooses a certain amount of pictures from which the users are to construct a presentation poster – visualizing their company culture or a given thesis within the design paradigm. The final research information is the discussion and reflection on the visual material combined with the final presentation poster. When the construction is completed, the users are asked to give an explanation regarding the content and expression of the presentation poster – this provides an opportunity for the designer to ask elaborate questions.

OBJECTIVES
The objective of the workshop is to present the Visual Construction method, and give the participants an understanding of the constructive perspectives within the method. By explaining the potential of Visual Anthropology within the field of participatory design, we hope to get responds as to how the use of visual material e.g. pictures can broaden the possibilities for an extended cultural-awareness. The participants of the workshop, will be inspired to use a form of visual material in a design context. It is through the use of pictures, the participants will come to an understanding of how the use of certain pictures can guide an interview in certain directions, without intervening directly with the interview process. The workshop will introduce the semi-structured interview, which opens the

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narrative room – understood as the potential for a free narrative created by the users. Further-more the workshop is intended to initiate a discussion concerning a proper use of pictures in a given design-context. This might serve as an introduction to the field of Visual Anthropology. Visual Construction is still a method under development. The method demands a con-siderable amount of input, both practical and from a visual theoretical perspective. It is our hope that the workshop will help us in a further development of the method.

THEORETICAL BACKGROUND

It has been customary to apply ethnographic and anthropological qualitative research methods in the field of participatory design as a way of obtaining information about the user-context. With methodical inspiration from the field of Visual Anthropology and with the use of Peirce's definition of the sign, VC is developed to be a strong supplement to the qualitative interview.

Visual anthropology

The field of Visual Anthropology is concentrated around a form of visual representation. Visual Anthropology is the studies of culture through an analysis of the production of visual material, pre-existing visual material and a corporative production of visual material – a cooperative of actors and the researchers [1]. The different methodical approaches to the field of Visual Anthropology all take outset in a concrete problem. During the workshop session we will present the participants/actors with a given problem and let the narration build around this given problem.

Instead of constructing a narration regarding a fictive culture or a fictive user-context we find it more appropriate to facilitate a narration in which the participants will reach an understanding of the method and the potential of the picture an interviewing tool.

Design images

In the understanding of a given culture the picture has communicative abilities, which support the users own sense of context and thereby mediation of this context. The picture in this relation functions as a semantic object, which is to create a relation between something new and something known and to ensure a meaning within relation. Meaning is to be understood as creating something recognizable – to create a relation to something already known and thereby useable. The picture then becomes something constructive, an artefact that brings new understandable information into the process of design. The picture is the medium that facilitates the on beforehand semi-structured interview, and at the same time facilitates an open discourse. The Percian understanding of a sign provides the researcher/designer with a tool to select the proper pictures. In the construction of the narration it is necessary to provide the users with pictures containing a given potential for interpretation. By controlling the interpretational potential, with the use of the different definitions of a sign, it is possible to structure an interview without intervening in the process of creating the narration. The method of visual construction thereby provides a basis for a constructive use of an understanding of the sign. With an intentional use of the symbolic, indexical, and iconic signs it becomes possible to semi-structure the interview. The use of symbolic signs may in addition open for a reflection among the users, reflections that may put a new perspective on the users cultural-awareness.

THE NARRATION

The Visual Construction method provides certain frames for the production and presentation of a narration. The workshop will provide a forum in which it is possible to create different narratives, depending on the particular problem. The participants will obtain an understanding of the construction of a narrative, and come to understand how the different narratives form a larger narrative, which eventually will form the final presentation. In the production phase, the participants will reflect and discuss several issues, which take outset in the interpretation of the pictures. These verbal discussions and reflections will provide the designer/researcher with an extended knowledge of the context. The construction of a narrative, through the use of pictures, puts a certain responsibility on the partici-pants – they have a responsibility in the construction of the narrative, a responsibility that usually is put upon the researcher. One negative aspect of the researcher guiding the interview is that of the closed categories. When entering a new user context the researcher has an agenda, which to a certain degree will control the interview. In the method of visual construction it is the respondent who guides the researcher – not the other way around. During the workshop it will be demonstrated how the given narrative will be constructed, not only through the verbal discourse but also in the spatial structures of the presentation poster. These spatial structures are an expression of the categorization, which takes place when constructing a narrative. The notion of categorization and classification is important to the understanding of how certain respondents classify and categorize their context [2]. Classification and categorization are important perspectives when analysing the narrative expressed verbally and visually.

WORKSHOP PROGRAM

Introduction: The organizers present themselves and the idea behind visual construction.

Method in action: The participants are divided into groups of equal numbers. During the execution of the workshop each participant will experience the workshop from both the interviewer and interviewed point of view. The workshop will take outset in a given design context.

Closing discussion: Each group presents their poster and the organizers will conduct a general discussion about the use of visual construction, within the field of participatory design.

REFERENCES

1.http://www.soc.surrey.ac.uk/sru/SRU11/SRU11.html

2.http://weber.ucsd.edu/~gbowker/classificatio

E-voting for citizenship in the information society: experiences, technologies, strategies

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Keywords
E-voting systems, citizenship, social choice.

INTRODUCTION

Recently, the interest for electronic voting has significantly increased: it is no longer a topic of interest for researchers and technologists only, but also media discuss, promote and criticize e-vote. In the framework of its Information Society Technology (IST) program, the European Commission has funded several projects which deal with electronic voting, mainly focusing on the technical and economical aspects. The aim of the workshop is to stimulate a multidisciplinary discussion about important socio-technical issues related to e-voting.

Experiments with e-voting and e-polling have already been carried in various places. On the WWW, we are frequently asked to answer to polls on the 'today's news' on the home pages of popular sites and portals. Also public institutions have done first experiments of using on-line polls to sense people's opinions about hot topics. The same could happens within large organizations such as the political parties, which nowadays suffer from lack of participation and need new forms of relationship with members and with the general public.

E-voting is not simply reproducing in an electronic way voting procedures as followed in political elections, from the city council to the European parliaments. The field of application is wider and includes referenda (which do exists in several European countries), consultative poling, and so on. E-voting may open new possibilities for renewing democracy. But is may as well irreversibly undermine the foundations of representative democracy based on universal suffrage. In comparison of the potential importance of e-voting might, citizens are hardly aware of its possibilities and risks. The same holds for politicians who seem far from realizing the potential impacts of e-voting.

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E-VOTING SYSTEMS

E-voting systems consist of several components:

1. a protocol to guarantee several crucial properties, including voters eligibility and authentication, vote uniqueness, secret voting without coercion, and the accuracy, integrity, verifiability and auditability of the voting process, etc. Are these properties at the same level of importance?
2. an user interface to create the best usability conditions for each segment of the population, including elderly and disabled people;
3. an organizational and institutional (and political?) setting which includes and supports the technological e-voting system.

Depending on the design and implementation choices of all these components, various positive and negative scenarios appear:

1. making possible in-house voting, e-vote might enhance voting participation by elderly and disabled people, but it might also have the opposite effect because of difficult and cumbersome user-interfaces;
2. e-vote can make calculation of the outcomes more reliable, transparent and free from (unintentional and deliberate) falsifications; but, it might also constraint voting freedom (in-house voting may allow a kind of control or pressure by family members or other people present during the voting;
3. e-vote may encourage young people participation,

but also reduce their awareness of the importance of participating to voting;

4. e-vote might enrich and reinforce representative democracy with elements of direct democracy, but it might also destroy both.

These kinds of dichotomies show that the discussion about the general social and political issues of e-voting should influence the design and implementation of the e-voting systems: citizens, citizens' representatives and politicians should be able to translate their opinions and remarks about the structure and functioning of the political system into socio-technical requirements for the design of components of e-voting systems. Otherwise, once more, a technology with possible crucial impact will be developed without the appropriate involvement of the civil society, and, when developed, it will impose its implicit norms on society.

AIM AND STRUCTURE OF THE WORKSHOP

The aim of the workshop is to stimulate a multidisciplinary discussion about important socio-technical issues related to e-voting. With a maximum of 15 participants, we aim at bringing further the theoretical understanding of the effects and possibilities of e-voting systems on political representation, and on citizenship.

We especially encourage submissions based on concrete experiences and projects. Also high quality theoretical position papers are welcomed. The format of the workshop is one of intensive discussion in order to produce an agenda for e-voting research and politics, from a participatory design perspective. The participants are requested to submit a (position) paper to the organizers, and these papers will be made available to the participants in order to be well prepared for the meeting.

THE ORGANIZERS

Fiorella De Cindio is Associate Professor of Programming Languages at the Computer and Information Science Department of the University of Milano. Her research interests include Petri nets as concurrency theory, object-oriented and distributed programming languages, and the applications of the ICTs to support life and work within social and office systems. In this field, she undertook action research and education on workers' participation in system design in the 1980s, and she was also a member of the team which conceived and developed one of the first CSCW prototypes: CHAOS, Commitment Handling Active Office System.

In 1994, she promoted the Civic Informatics Laboratory, for which she is now responsible, and, in this role, she set up the *Milano Community Network* (RCM), which is now a Participatory Foundation.

Peter van den Besselaar currently is head of the Social Sciences Department of NIWI, an information science institute of the Royal Netherlands Academy of Arts and Sciences, and Associate Professor of Social Informatics at the University of Amsterdam. He has published extensively on the social dynamics of scientific and technical change, on structures of information spaces, on technology and employment, on PD, on digital cities, and on e-government.

Currently he is involved in three major EU funded projects: *Commorg* (a comparative study on email use in organizations), *Eicstes* (a project studying and mapping the structure of the WWW) and with Fiorella De Cindio in *TruE-vote*, a project on electronic voting systems.

A Pattern Language for Living Communication:
Deepening Participation

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ABSTRACT
This workshop is directly tied into an ambitious, global, strongly participatory project organized by the Public Sphere Project (PSP) of Computer Professionals for Social Responsibility. The intent is to build a coherent and compelling "pattern language for living communication" which reflects the collective wisdom of a very loosely knit community of activists, researchers, policy-makers, and technologists worldwide currently engaged in a wide range of technological and social activities to develop a communication and information infrastructure that supports social and environmental amelioration by civic society. The objectives of the workshop are as follows: move pattern language forward (refine patterns and/or language; make process more participatory), get participatory design community involved in a long-term way on project, evaluate and critique the project so far, surface ideas for deeper and more effective participation in process, and add new patterns (especially related to participatory design) and insert more participation within the patterns themselves.

Keywords
Pattern Language, participatory design, public sphere, knowledge structure

CONTEXT
This workshop proposal is directly tied into an ambitious, global, strongly participatory project organized by the Public Sphere Project (PSP) of Computer Professionals for Social Responsibility. The intent is to build a coherent and compelling "pattern language for living communication" which reflects the collective wisdom of a very loosely knit community of activists, researchers, policy-makers, and technologists worldwide currently engaged in a wide range of technological and social activities to develop a communication and information infrastructure that supports social and environmental amelioration by civic society. Thus the pattern language will ultimately contain theory, philosophy, political dimensions, design practices, as well as nitty-gritty, pragmatic suggestions. We plan to publish this pattern language in online and printed form. A "pattern language" (described below) is a somewhat complex theoretical structure which is based on the insights of professor emeritus Christopher Alexander and his colleagues at the Center for Environmental Design at the University of California, Berkeley. Alexander's book, *A Pattern Language* (1977) is a classic in the area of architectural design and theory.

This workshop is the next phase of a larger process. At the time of this writing approximately 165 pattern proposals have been entered (from people in Bolivia, Ghana, South Africa, Malaysia, Philippines, Argentina, Japan, Russia, Canada, western Europe and the United States) into our online "pattern management system" (http://diac.cpsr.org/cgi-bin/diac02/pattern.cgi/) and are therefore now available for public viewing and pattern submissions and for editing by authors. By the time of PDC in June, 2002 it is hoped (and believed) that the language itself will be further advanced. Although additional patterns will have been submitted, the more substantive work will have been completed on the language itself: merging, deleting, refining, ordering, and linking of patterns into a form that more closely resembles a *complete* pattern language that covers the entire domain (itself a difficult definitional problem) is non-duplicative and non-self-contradictory, and is coherent, compelling, and useful in a wide variety of situations. At this phase of the project I am hoping to engage the participatory design community in a participatory evaluation, critique, and brainstorming session. Since the project is intended to be participatory in a very broad way (from initial development to eventual use and evaluation) engaging the participatory design community in a dialogue as to the current state of the project and the possible avenues for its completion is seen as absolutely critical. The challenge here is setting the

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stage so that the workshop effectively meets its objectives. A major part of this is providing the right amount of project information in the right form at the onset and asking the right sorts of questions of the participants.

This proposal describes the basic parameters of the workshop but I will be relying on the expertise, knowledge, and independence of the attendees to steer it in interesting and fruitful directions. In other words, this workshop will have many *leaders* and many opportunities for interesting and fruitful excursions. This should help ensure that it is intellectually exciting for all involved. This workshop directly ties into the paper that I will be presenting at PDC '02 which provides a strong link and contextual background for the workshop.

According to Alexander (1977), "A pattern is a careful description of a perennial solution to a recurring problem within a building context, describing one of the configurations which brings life to a building." He describes a pattern language as, "a network of patterns that call upon one another. Patterns help us remember insights and knowledge about design and can be used in combination to create solutions." Alexander, for example, proposes "small meeting rooms" as pattern #151 and "Half hidden garden" as pattern #111.

We are using Alexander's constructs (basically "semi-structured information") as the basis of our project. Like Alexander, we are interested in systems that are more convivial. We are also interested in design. We, however, are focusing our attention on communication systems, not systems related to architecture and building. Our core precept is that certain forms of information and communication systems are likely to be more effective at promoting conviviality in the human and environmental spheres. These systems are also more "authentic" and more equitable; unlike, for example, commercial television whose product is designed to sell merchandise, constructed by professionals with commercial – not civic or community – allegiances, fosters damaging stereotypes, is often unanswerable to the public, and is likely to be the conduit of propaganda. Thus the systems we hope to promote are more likely to be equitable and participatory. They will support what I've called in my book (Schuler, 1996) the six "community core values," conviviality and culture; education; strong democracy; health and well being; economic equity, opportunity, and sustainability; and information and communication.

This project capitalizes on several notable aspects of our era:

- Intense interest and influence in civil society worldwide.
- Increasing penetration of the Internet and the World Wide Web with attendant potential for global collaboration.
- Need for a "network-based" representation of the wide variety of thoughts and approaches related to community and civic uses of ICT worldwide.

We believe that a useful and compelling pattern language is possible (Alexander's "A Pattern Language" is an existence proof) and that we can develop one in an efficient collective, participatory way. Our strategies for developing and disseminating the pattern language are listed below:

- Use patterns as an orienting theme for a conference and information structure.
- Use a common format to facilitate pattern integration.
- Develop and refine appropriate participatory processes (combining in-person and virtual interactions) that support each phase of the development of patterns and the pattern language.
- Develop an easy-to-use web application that supports every aspect of the process including pattern submission and review, and pattern language development, access and use, and evolution.
- Publicize the web site and encourage people to post their patterns.
- Provide a scholarly avenue for pattern development and presentation (while also making the project accessible to a non-academic audience).
- Build on successes of previous DIAC symposia and the worldwide community that has evolved over the past several years.
- Work on an ongoing basis to evaluate the process and to explore the pertinent issues (including a preliminary history and analysis of the social and technical processes).

Each phase of the project has an associated "community" and "output" that is created during that phase. The type of participation has been determined largely by the community that has been involved and what needs to take place at that particular phase. The phases as we are now defining them are as follows: (1) conceiving project; (2) developing and marketing project; (3) entering patterns; (4) reviewing patterns for presentation; (5) language development; (6) language review; (7) process evaluation and critique; (8) final edits; (9) language evolution; (10) language evolution.

OBJECTIVES

This workshop is intended to be collaborative. I am telling the story of our participatory project and I'm hoping to hear their feedback based on their expertise, values, and judgement. I believe that our interactions will help me in moving the project forward and I'm trusting that the time the

attendees spend in the workshop will be helpful to them in their work.

The objectives, both general and specific; for me and for participants are as follows:

- Move pattern language forward (refine patterns and/or language; make process more participatory)
- Get participatory design community involved in a long-term way on project
- Evaluate / critique the project so far
- Surface ideas for deeper and more effective participation in process
- Add new patterns (especially related to participatory design) and insert more participation within the patterns themselves

Workshop Plan

The plan is very basic but can be modified based on feedback from workshop reviewers or from participants themselves. It is a pared-down version of "Open Space Technology" in which participants largely determine the agenda based upon some initial constraints established by the convenor.

1. Workshop begins with a brief discussion of the project; its intent, rationale, approach status. I will have the set of patterns with me and I will use one or two as examples. If at all possible I plan to display the patterns along the wall in the order that the group at DIAC-02 put them in. There will be some brief discussion about this and I will answer questions. I'll also outline the basic plan for the workshop and distribute the list of critical questions (next section).

2. For about 15 minutes participants are encouraged to browse the patterns, mill around and discuss the patterns, the intent, and the process.

3. Participants offer their ideas for small group discussions that they'd like to organize. These ideas are written down on a white board. These ideas can come from the critical questions list or their own imagination. People can also use a pattern or a set of patterns as their focus. There will be some discussion as to whether the topic is too broad or too narrow or whether groups should merge or split.

4. Break into small groups based on the agenda items to discuss the agenda item to develop recommendations.

5. Discussion, reporting back, recommendations

CRITICAL QUESTIONS

How can we improve the quality of the participation in the process to come?

What could we have done to improve the quality of the process already passed?

What new patterns can we add to explicitly add participatory design to the language?

How can we integrate participatory design orientation and methodology into existing patterns?

How could / should patterns-in-work be annotated on paper and online to support integration into the pattern language?

What observations, theories, recommendations could be integrated into the text that ultimately will describe the pattern language and how it should be used?

How should the pattern management system be improved? What new functionality should be added?

How does our choice of artifacts (patterns / pattern language) shape the outcome of the project (both positively and negatively)?

How does our particular approach to this project shape the outcome of the project (both positively and negatively)?

WORKSHOP PARAMETERS

I'm willing to work on this with just about any number of participants since we will be breaking into smaller groups anyway. A larger number of people would just mean more smaller groups. I am, however, envisioning between 10 and 50 people. The workshop doesn't require any computer support although a computer connected to the Internet with associated display capabilities would probably be useful in displaying the full patterns and the capabilities of the online pattern management system (diac.cpsr.org/conferences/diac02/patterns.cgi). I will be bringing the pattern set (150-250 patterns) in paper form and ideally these could be taped to a wall in the workshop room. The workshop should be anywhere from 1.5 to 3 hours.

Anybody at PDC would be welcome to attend this workshop. People who are interested in the design and development of socially responsible ICT; broad, multi-phased participatory design projects, and emergent, collective, networked knowledge representation would make excellent participants. Anybody with familiarity with Alexander's work would bring in important insights as well.

WORKSHOP CONVENOR

Doug Schuler, the workshop convenor, has been working in the area of social responsibility in computer systems for over 20 years. He is a co-founder of the Seattle Community Network (http://www.scn.org) and has authored and edited several books and articles on these topics and has presented at many locations around the world. He is currently a member of the faculty at The Evergreen State College where he teaches programs related to computers and society. In the fall of 2002 he will again co-teach Community Information Systems, a year-long program for 50 students who will work with communities around the world to co-develop web applications to support the communities.

Towards IT-support for shop floor working groups

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ABSTRACT
Many manufacturing enterprises introduce various forms of flexible work organization on the shop floor. However, existing computer-based production planning and control systems pose severe obstacles for self-governing or autonomous working groups and other kinds of shop floor control to become reality. The intention of this workshop is generate discussions on how to support responsible self-governing groups of workers in their situated planning, management and coordination of the activities on the shop floor. Findings from field studies of self-governing working groups in six manufacturing companies are reported and will be used for initiating the discussions.

Keywords
Shop floor work, self-governing groups, coordination, work planning and management, IT-support.

BACKGROUND
For most of the 20th century, manufacturing has epitomized a work organization characterized by radically centralized and very detailed and rigid regulation of work in which the individual's sphere of activity is reduced to a small repertoire of monotonous movements. However, a series of fundamental changes over the last two decades have placed the issue of the work organization in manufacturing on the agenda again. Faced with turbulent markets, industrial enterprises are opting for strategies that involve shorter product life cycles and increasing product diversification, which in turn requires a reduction of inventories and buffer stocks, extremely short lead times, shrinking batch sizes, concurrent processing of multiple different products and orders, etc. To meet these requirements, industrial work organizations must be able to adapt rapidly and diligently to changing demands in a concerted and integrated way.

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To cope with these demands, a large number of manufacturing enterprises are now trying to introduce various form of flexible work organizations on the shop floor, usually characterized by increased local control over job allocation production planning, etc.

The existing IT support systems are, however, designed for an entirely different purpose and do not support these working groups properly. For example, orderly coordination is accomplished through the local actions and interactions of actors who have only local control. The presumptions of centralized materials-and-resource-planning systems (MRP), that the planning department of the enterprise is able to predict and control, in essence, the manifold interdependent activities of a manufacturing enterprise, is illusory, and in flexible manufacturing the enormous systemic costs of maintaining this illusion have become evident.

This delegation of power and responsibilities to working groups, and demands for re-thinking the approaches for providing IT-support for shop floor workers, introduce a series of new and interesting challenges for the field of participatory design.

ISSUES OF CONCERN
The aim of this workshop is to initiate discussions on proper approaches, relevant requirements, useful facilities, etc. when investigating possibilities and designing applicable IT-based systems for shop floor working groups. Such systems could, among others, support the working groups in coordinating and managing tasks such as activity planning, staffing, scheduling and re-scheduling, negotiations, etc.

Issues to be addressed will cover (not exclusively):

- The nature of shop floor work.
- Central characteristics of the situated planing, management and coordination on the shop floor.
- Requirements for IT support systems for self-governing groups.

- Design-principles and architectures for IT support systems for self-governing groups.

The discussions will address relevant approaches for designing this type of systems, requirements for such systems, potentials of the information technology of today. We encourage, participants from different areas like PD, CSCW, HCI, Engineering and design, and practitioners to participate and get involved in a cross-disciplinary discussion. We hope to attract participants that have knowledge about and experiences from action research and field studies in shop floor environments, and/or design cases and prototypes of systems for shop floor working groups.

WORKSHOP ORGANIZATION

Participants are encouraged to submit position papers (1-3 pages) to the organizers. The position papers are optional but most welcomed. Position papers received by June 15 will be e-mailed to the participants before the workshop.

The organizers will provide detailed presentations of findings from the six case studies conducted at Danish manufacturing companies. These will present central findings on how the work is undertaken, the prime challenges for self-governing groups with respect to planing and managing their work activities, and overall requirements for IT-support of this work. We might also present an illustration prototype of a planning system designed on the basis of our findings in one of the studies.

Hopefully, we will also be able to have one or two others presenting relevant material. This will be selected from the position papers.

Based on the presentations and the participants' own experiences we will finish the workshop with a thorough discussion of the issues listed above and other themes of interest to the participants. This discussion will also address ideas to follow further in the future.

ORGANIZERS

Peter H. Carstensen and Kjeld Schmidt, IT University of Copenhagen. Kjeld has a background in sociology and has for many years been a central player in the field for CSCW. He is the coordinating editor of the CSCW Journal. Peter holds a Ph.D. in Computer Science and is head the Department of Design and Use of IT at the IT University of Copenhagen. Peter also has his prime interest in CSCW.

They have both conducted a large number of field studies, and they have been involved in a number of studies of shop floor working groups in relation to the FASIT project (cf. http://cs.aue.auc.dk/fasit/) and the IDAK project (cf. http://cs.aue.auc.dk/idak/). These projects have undertaken studies in six large Danish manufacturing companies, established a series of requirements for IT support, and developed an illustration prototype of a planning system for a shop floor working group. Results from these projects can, amongst others be found in [1, 2]

ACKNOWLEDGMENTS

The IDAK project is supported by Industriens Uddannelsesfond. The project was conceived and initiated by Irene Odgaard of the Central Organization of Danish Industrial Workers (CO-Industri) whose support is gratefully acknowledged. We are indebted to the workers and managers at the six companies for having given the project their support, their interest, and their time.

REFERENCES

1. Carstensen, Peter H., Kjeld Schmidt, and Uffe K. Wiil: "Supporting shop floor intelligence: A CSCW approach to production planning and control in flexible manufacturing," in S. C. Hayne (ed.): *GROUP'99 - International ACM SIGGROUP Conference on Supporting Group Work, Phoenix, Arizona*, ACM, 1999, pp. 111-120.

2. Carstensen, Peter H., and Kjeld Schmidt: "Self-Governing Production Groups: Towards Requirements for IT-Support, Accepted for *the 5th IEEE/IFIP International Conference on Information Technology for Balanced Automation Systems in Manufacturing and Services* ((BASYS 2002), Cancun, Mexico, September 2002 [forthcoming].

Designing Tangible User Interfaces to Support Participation

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ABSTRACT
This workshop addresses design aspects of tangible user interfaces (TUIs). Particular focus is put on TUIs that support collaboration, and on how a participatory design process for such TUIs can be organized. The workshop will demonstrate examples of collaborative, tangible user interfaces, and allow participants for hand-on experiences with the examples. Further, participants at the workshop will discuss possibilities and experiences of using role plays during the design process for enhancing understanding of the system. Finally participants will discuss questions raised by the organizers in this proposal and by participant during the workshop or in positions statements.

Keywords
Tangible user interfaces, collaborative interfaces, participatory design, role plays

INTRODUCTION
Tangible Interfaces are of increasing interest in research and are beginning to show their potential for practical applications. As tangible interfaces differ in many aspects from classical WIMP interaction with monitor-mouse-keyboard *and* from interaction with virtual realities, there are no standard answers for design issues. Hardware and software need to be designed as a well-integrated unit to fit into physical interaction with the tangible, digital interface. In addition tangible interfaces show great potential for supporting collaborative situations (e.g. in participatory design), thus necessitating a different approach to design as well. These two aspects affect both the resulting design (design recommendations, good examples of design) and the process of design (e.g. assessing and evaluating systems).

Goals and Objectives
The workshop aims to bring together existing experience about the design of tangible interfaces and to discuss tangible interaction. Aorative, tangible interaction The workshop will address these questions special focus will be on design for collab:

- What do we consider to be a good tangible interface?
- In which kind of work processes and activities to we prefer tangible interfaces as opposed to 'ordinary' interfaces?
- What should the design process for collaborative, tangible digital interfaces look like?
- How can the design of these interfaces (their efficacy and usability) be assessed?
- What specific problems of collaborative work processes are important to address when designing tangible interfaces?

Methods
The first portion of the workshop will consist of hands-on experience of tangible interfaces. The workshop organizers will use role play to demonstrate examples of tangible interfaces that have been developed at their respective research groups. Participants are encouraged to bring along and demonstrate examples of tangible interfaces from their own research.

During the second portion of the workshop participants will discuss the various systems presented and the usefulness of role play for enhancing their understanding of the systems.

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The final session will focus on developing responses to the questions raised in this workshop description as well as any raised by position papers, and to outline new issues and questions that are of importance for future work.

System examples from organizer's research

The following two systems represent work in the area of TUIs by the organizers.

The Envisionment and Discovery Collaboratory (EDC) Participate-in-the-Action Board (PitA-Board)—L³D, Boulder

The EDC is an early prototype of an integrated environment to support community participation. Building upon the experience of using physical, game-like methods in participatory neighborhood development, the system is inspired by the game board of physical design games, but augments the tactile aspects of physical game pieces with the dynamic capabilities of computational simulation.

The most recent version of the EDC uses the PitA-Board as its interactive interface. The PitA-Board has the format of a large chessboard and is able to detect sensorized graspable tokens placed on its squares. The underlying technology consists of a grid of 2-inch-square antennas that can sense location and identity of 15 distinct transducer coils that can be imbedded in physical objects, allowing for multiple cursors and simultaneous interactions. Interaction with the system is done entirely with tokens, which can be either used as interaction objects or as specialized tools. The board is visually augmented by a top-projected simulation. One application of the PitABoards supports neighbourhood participation in transportation planning. A map is projected onto the board and residents place house tokens onto the map, mark important areas (shopping mall, schools) discuss the existing bus route and design a new route with stops, aided by simulation facilities of the system.

The Generic Tag & Track Table (K3, Malmö).

This TUI is developed by students at K3, Nicklas Nilsson and Micke Rundberg, supervised by Lone Malmborg. The TUI table is designed for two different interaction design applications. Both applications are directed towards augmentation of – very different – creative processes. The first is called Tabletop Wireless Tracking System [TWEET]. TWEET is a design proposal for the tangible interface of a multitrack audio mixer. In the first stage six different objects will be placed on the table. Each object represents an audio track in a song. The concept of mixing is that when the user moves an object to the right the sound of the corresponding audio track will be panned right and reverse. When the user moves an object to the back the sound of the corresponding audio track will be lowered in volume and reverse. Primary users are musicians with no interest in learning traditional mixers. The interface is supposed to be used as a rough sketcher in the early mixing stages. The second application is a Sketching tool for designers in collaboration. An area of the Generic Tag & Track Table is set up to support sketching activities with a big display that can hold images from the individuals that are within the area. The display is passive and reflects only the sketching action on the table. For the input to the display, the sketches on the table have to be digitalized. An important point is to preserve the origin of sketching with paper and pen. The feeling of paper as a simple material supports a rapid, open way to drawing which is hard to achieve with a mouse or any other normal computer input device.

Using Role Play to Experience Group Collaboration using TUIs

Using a role play method, we will simulate a potential use situation for the PitA-Board. Participants play roles of inhabitants of a suburb, whose bus route connecting it to the city needs to be improved. (This method has been used previously for assessment of the system.) The map of the neighbourhood and results of interaction (and simulation) are top-projected onto it.

If time allows we may also set up role plays for more of the demonstrated TUI examples.

Starting Points for Reflections on Role Play

The use of role play has been a beneficial method for the assessment of early prototypes. Role play can be used within the researcher group, testing general interaction issues and doing rough testing, and with external subjects. Role play allows the observation of group processes with the system, it can evoke emotions and conflict, thus approximating potential live situations, and gives external participants a chance to base their feedback on hands-on experience. The scenarios should attempt to touch issues of real-world relevance, avoiding laboratory situations and detached problem solving.

It is also important to understand where problems with and limitations of role play lie. One problem we have experienced is that participants may fail to take on the voice of their persona. Another is that the design of scenarios needs to be complicated enough to be realistic, but not so complicated that it becomes unmanageable. Designing role plays that are effective for assessment and feedback also requires the development of facilitation techniques supporting the group processes for collaboration.

If time permits, we can also explore other uses of role play, including a short video from the Interactive Institute with examples of role play and drama techniques used in industry, utilizing simple things as props for imagining the usage of future technologies.

PARTICIPATION

Intended Participants

We hope to generate dialog among those involved in developing hardware and software for tangible user

interfaces, those involved in applying technology to collaborative processes, and those engaged in assessing the usability and efficacy of such environments.

Maximum Number of Participants

In order to allow workshop participants to engage in role plays and to try out TUI's the number of participants is limited to 20.

Participant Preparation

Participants are welcome to send us a short (1-2 page) position statement by e-mail (until June 10) for the workshop. We will make these available via the PDC website. Position statements can also be prepared for short presentation during the workshop. We encourage anyone who has been working in this area to bring along and demonstrate TUI examples. If you wish to bring along such systems, please inform the workshop organizers, so that time can be provided in the schedule for your demonstration. We would also like to know if special presentation equipment is needed.

Hal Eden has worked on the Envisionment and Discovery Collaboratory since 1996, developing wizard-of-oz studies, mockups, initial prototypes, and the current PitA-Board.

Eva Hornecker has worked on a development project within the 'Real Reality' graspable user interface approach, facilitating synchronous modelling in real and virtual worlds. She is now doing her Ph.D. on cooperative interaction with graspable interfaces and resulting design issues, and has done empirical work using video-analysis and role-play on this topic.

Lone Malmborg is currently heading the Creative Environments Research Studio at Arts and Communication, Malmö University. Her interests include interaction design technologies and concepts, and she has set up and headed an education program at Arts and Communication in this area.

Special Equipment needed:

Power Supply, probably video equipment, and possibility to mount top-projection.

Flipchart, several pin boards, post-it notes

Social Formations of PD - Living Archaeology

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ABSTRACT
This workshop is organized to contextualize technology development movements like PD as contingent, sociopolitical formations, and to construct alternative questions to be asked of such technology development efforts.

Keywords
History, technology development, dominant paths, reflexivity, contingency.

RATIONALE AND OBJECTIVES
The workshop responds to the call in this year's conference theme to "inquire the politics, contexts and practices of collaborative design work" and "the transition from what we learn from studies of work practices and social interactions to the design of a system, application or other design products." In addressing this call, this workshop is organized to contextualize technology development movements like PD as contingent, sociopolitical formations, and to construct alternative questions to be asked of such technology development efforts.

Through their integration of humanistic and technical knowledges, a rich texture of analytical resources has developed through efforts falling under the rubric of PD (and other movements similarly concerned with the design of technical systems for others). Over time, dominant discourses and forms of doing have developed within, by, and for these movements. Although contingent, these dominant paths have consequences for what are legitimate and relevant questions to ask and what are legitimate and relevant modes of intellectual and practical concern. The workshop is not intended as a "where have we been, where are we going" session. Rather, it aims to explore the contingency of these paths by holding a Pasts Workshop.

Seven scheduled participants (listed below) will address various components of dominant paths within PD and kindred movements, toward identifying a reflexivity that might be developed with respect to participatory design practices.

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WORKSHOP DESIGN
Building on strategies of a Future Workshop, 20 participants are invited to join seven scheduled presenters to form a participatory design Pasts Workshop. The primary objective of the workshop is to construct a process of understanding the past: what have become dominant modes of doing under the rubric of PD, and what might have happened differently? Future workshops tend to take the staged structure of Critique, Fantasy, and Implementation. This Pasts Workshop will likewise entail three structured stages of Critique, Memorial, and Positing as follows.

Critique
A critique stage will be kicked off by brief contributions from seven scheduled participants (listed below) who will address various components of dominant paths within PD and kindred movements. Discussion will be geared toward identifying possible terms of critique.

Memorial
Following a short time for writing, all workshop participants will be asked to consider these critiques as related to possible alternative pasts. The objective of this discussion is to identify 3-5 clustering themes. Once identified, these themes will provide the point of departure for small group discussions along three issues: (1) identifying aspects of PD pasts that today might be sought to have been otherwise? (2) what social processes shaped this formation, and in what senses are these transformable? (3) what might a different past lived by participatory design formations look like?

Re-Positing
Each of the groups will then be brought back together to re-posit pasts for participatory design formations. What could and could not have been otherwise?

SEVEN SCHEDULED PARTICIPANTS WILL ADDRESS THE FOLLOWING TOPICS.

Ellen Balka, School of Communication and ATIC Design Lab, Simon Fraser University.

Where the gender is in participatory design processes

Although it has often been suggested that participatory design has feminist roots, issues related to how gender and other differences are addressed within the context of design projects and on design teams has largely escaped critical scrutiny. Participatory design, like other forms of design, is a process (or a series of processes), that is situated within broader socio-political formations, and yet we have seldom looked at where gender is in that process, or how it operates within participatory design processes. In my presentation I will explore "where gender is" in participatory design processes, by using Harding's (1996) view of gender as an analytic tool to make sense of design team dynamics and processes. In particular I will focus on the gendered nature of expertise. My findings-- (based on analysis of interviews with participatory design and ergonomic practitioners) suggest a focus on design as process, and an emphasis on desired outcomes of participation, will bring us closer to realizing the ambitious goals of participatory design.

Sisse Finken, Dept. of Communication, Journalism and Computer Science, Roskilde University.

Domains of Knowledge

I would like to think about discourses: how they aren't just out there somewhere or just pop up out of the blue. To see them, rather, as productive instruments that are produced by and within certain formations within certain institutions. I would like to take this path and think about it in relation to the notion of the expert and his/her rights of access to the discourse of IT. To think about how Participatory Design as a domain of knowledge gives meaning to what systems development/design is and becomes when it is being thought, talked about and seen as a buffer for the ones who are affected by the technology being designed.

Joan Fujimura, Dept. of Sociology, University of Wisconsin

To be announced.

Randi Markussen, Dept. of Information and Media Studies, University of Aarhus

Participatory design and partial connections

"Nothing can substitute for loss of conviction but a new conviction". (M.Strathern 1991:38). Feminists and other scholars engaged in technoscience have argued that giving up on a priori assumptions about what counts as nature versus culture technology versus work organization, experiment and design versus historical and sociological analysis opens a space for not only questioning dominant ideas of technology, but for alternative visions of knowledge construction and engagement. A new vocabulary is taking shape: We are in a world made up of cyborgs, material semiotic networks, partial connections and situated knowledges to mention some important terms that encourage us to explore practices 'in practice'. I will discuss some of the implications of the approach with examples from a study of the incorporation of an electronic medication module at a plastic surgery ward that Finn Olesen and I did; I would like especially to focus on how we may account for participation.

Finn Olesen, Dept. of Information and Media Studies, University of Aarhus

The Materiality of Technology

In this conversation I would like to take up the often neglected or taken-for-granted theme of the material dimensions of technology. In a sense it is trivial to say that technology is material; but what does it mean to make this claim? Does it mean that certain invariant, physical properties are constituent parts of the technological artefact in question - a cartesian/objectivist assumption. Does it mean that material world is the foundation of technology, as it is of all life - a marxist assumption. Does it mean that materiality is a non-idealist, anti-positivist, but undefined claim of social studies of technology - a discursive assumption. Or does it mean that materiality is a dynamic side to the material-semiotic practices of situated figurations, especially of technoscience - a cyborgian assumption. - All these different assumptions about the materiality of technology are applied in theories and practices, but (how) do we separate them, at what price, and with what benefits?

Lucy Suchman, Centre for Science Studies, Dept. of Sociology, Lancaster University

Participatory Designs and PD Singularity

Rather than beginning with the premise that Participatory Design is a singularity (e.g. 'movement', discourse, instrumentality), I would like to start with the question of 'participatory designs'; that is, the multiple experiences, identities, desires, etc. that we collectively bring to the workshop and that, presumably, bring us to the larger conference. Within that frame, I would be very interested in a critical contextualisation of PD, including the question of how 'it' acquired its initial caps, what that tells us about the processes through which things come to be configured as singular, and how it might be otherwise. I'm particularly interested in relations between the politics of design as a profession, and the possibilities of design more generally as specific forms of ordering.

Katie Vann, Dept. of Communication, University of California, San Diego

Politics of Articulation

Running through many writings on work and technologies in use is a realization of difference. We might say that it has become a value of PD and like communities that one recognize the differences and relations between the sign embedded in formal systems, on one hand, and its lived excesses, on the other. I am interested in thinking about how these realizations are dealt with in some contemporary studies. I address this issue through a consideration of uses of the concept of articulation work and its relation to pragmatism.