Wisdom is not the product of schooling but the lifelong attempt to acquire it.
- Albert Einstein

Using a Sabbatical for Lifelong Learning

Gerhard Fischer

Presentation, L3D, August 2003
Abstract

I will describe all the exciting things that I learnt during my sabbatical year — and I am looking forward to hear from all of you how you pushed science forward while I was away!
New Zealand

- **some facts:**
  - 4 Million People (less than 1 Million on the South Island)
  - 50 Million Sheep

- **everything is different:**
  - Christmas is the time to go for a beach party
  - they drive on the “wrong” side of the road
  - the sun is in the north in the middle of the day
  - the southerly winds are the cold ones

- **questions:**
  - what is the name of the indigenous people?
  - which objects are named “Kiwi”?
  - what is the distance between New Zealand and Australia?
Work

- **Books Read**

- **Talks Given**
  - University of Canterbury, Christchurch
  - University of Waikato, Hamilton
  - University of Sydney (Judy Kay)
  - University of Technology, Sydney (Ernest Edmonds and Linda Candy)
  - Intelligent Interactive Technologies Research Group, CSIRO, Sydney
  - Centre for Lifelong Learning and Development, Adelaide
  - Murdoch University, Perth
Masterclass and Symposium, March 2003

- **Masterclass “Interacting With and Through Next Generation Computing Environments”** (organized by Andy Cockburn, see [http://www.cosc.canterbury.ac.nz/masterclass/](http://www.cosc.canterbury.ac.nz/masterclass/)) with
  - Ben Shneiderman
  - Jenny Preece
  - Stephen Brewster
  - Gerhard Fischer

  ➔ **Erskine Fellowship**

- **Symposium “Social Creativity: What is it, why is it needed, and how can we support it?”** with
  - Kumiyo Nakakoji
  - Kouichi Kishida
  - Yasuhiro Yamamoto
  - David Redmiles
  - Ernest Edmonds and Linda Candy
L3D’s Research Focus and “Branding”

- **Artificial Intelligence (AI)** → **Intelligence Augmentation (IA)**
  - replacement → empowerment
  - emulate → complement (exploit unique properties of new media)

- **instructionist learning** → **constructionist learning**
  - learning about → learning to be
  - when the answer is known → when the answer is not known (collaborative knowledge construction)

- **individual** → **social (distributed cognition, social creativity)**
  - knowledge in the head → knowledge in the world
  - access → informed participation

- **generic** → **specific (“universe of one”)**
  - design → meta-design (adaptive, adaptable, situated)
  - general → customization, personalization

- “gift-wrapping” with new media → **co-evolution** of new media, new theories about thinking / working / learning / collaborating, and new organizations
Papers Published

- Fischer, G. (2002). Beyond 'Couch Potatoes': From Consumers to Designers and Active Contributors, in FirstMonday (Peer-Reviewed Journal on the Internet).


Papers to Be Published


Ideas Struggled With

Design Time and Use Time

- **key**
  - system developer
  - user (representative)
  - end user

- **time**
  - design time
  - use time

- **world-as-imagined**
  - planning

- **world-as-experienced**
  - situated action
Meta-Design — Beyond User-Centered Design and Participatory Design

- **user-centered design:**
  - analyze the needs of the users
  - understand the conceptual worlds of the users

- **participatory design**
  - involve users more deeply in the process as co-designers by empowering them to propose and generate design alternatives
  - focus on system development at design time by bringing developers and users together to envision the contexts of use

- **limitations of user-centered design and participatory design**
  - despite the best efforts at design time, systems need to be **evolvable**
    - to fit new needs
    - account for changing tasks
    - incorporate new technologies

- **Elisa Giaccardi:** “Principles of Metadesign — Processes and Levels of Co-Creation in the New Design Space”; at: [http://x.i-dat.org/~eg/research/texts/my_dissertation.pdf](http://x.i-dat.org/~eg/research/texts/my_dissertation.pdf)
# Traditional Design versus Meta-Design

<table>
<thead>
<tr>
<th>Traditional Design</th>
<th>Meta-design</th>
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<tbody>
<tr>
<td>guidelines and rules</td>
<td>exceptions and negotiations</td>
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<td>representation</td>
<td>construction</td>
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<td>content</td>
<td>context</td>
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<td>resolution</td>
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<td>top-down</td>
<td>bottom-up</td>
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<td>autonomous mind</td>
<td>distributed mind</td>
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<tr>
<td>creation</td>
<td>co-creation</td>
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<td>specific solutions</td>
<td>solutions spaces</td>
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<tr>
<td>art</td>
<td>interactive art</td>
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</tbody>
</table>
Distributed Cognition and New Media

- **media as extensions of humans:** the history of the human race is one of ever-increasing intellectual capability; our brains have gotten no bigger, our hands no more nimble, but there has been a steady accretion of new tools for physical and intellectual work.

- **the major step forward:** invention of reading and writing → **question:** will digital media lead to another quantum jump?

- **digital media / computer science**
  - have we seen most of it or are we just at the beginning?
  - Winston Churchill: "This is not the end. It is not even the beginning of the end. But it is, perhaps, the end of the beginning."
Distributed Cognition (with Stefan Carmien)


- collaboration with Stefan Carmien: differentiate between
  - tools for living
  - tools for learning
Tools for Living

- **definition**: do task with tools

- **examples**:
  - **eye-glasses**: to compensate for poor eyesight (question: is the correction of eyesight with “lasik surgery” conceptually different?)
  - **pencil and paper** (literacy): to overcome the limitations of short-term memory

- **opportunity**: while some people might have no problems to learn to perform the tasks without the tools (e.g., spelling), they use tools for doing these “low level” tasks and can therefore focus on the more interesting tasks

- **independence**:
  - people will be **dependent** on the tool
  - but: the availability of the tool (e.g., the tools to be developed in the “Mobility for All” project) may give people the **independence** to engage in personally relevant activities (e.g., mobility)
  - analyze how **interdependence/socialization** in one dimension can increase **independence** in another dimension?
Tools for Learning

- **definition**: people learn to perform the tasks over time without tools (an objective of many things students learn in school)

- **examples**: hand-held calculators, spelling correctors (for people with dyslexia?)

- **independence**: people will become independent of these tools

- **where are the boundaries?**
  - Bateson’s example of a blind man with a stick “Suppose I am a blind man, and I use a stick. I go tap, tap, tap. Where do I start? Is my mental system bounded at the hand of the stick? Is it bounded by my skin? Does it start halfway up the stick? Does it start at the tip of the stick?”

- **external resources**
  - profoundly affect our conception of what, how, and why one needs to know and learn
  - put greater emphasis on access to tools to-think-with than a solo understanding without tools
New Relationships between Consumer and Producers (with Yunwen Ye)

- Producer/Consumer Models in a Consumer Culture (“Access”) → Design Culture (“Informed Participation”)

- Examples:
  - traditional publication process ↔ Web
  - CHI conference ↔ HCI International
  - traffic information from police ↔ traffic information from drivers (via cellular phones)

- limitation:
  Making All Voices Heard ↔ Trust and Reliability of Information
Producer/Consumer Models in a Consumer Culture ("Access"): Strong Input Filters, Small Information Repositories, Weak Output Filters

Limitation: Making All Voices Heard
Design Culture ("Informed Participation"):
Weak Input Filters, Large Information Repositories, Strong Output Filters

Limitation: Trust and Reliability of Information
What I Have Not Achieved → Many Things

- book written
- emerged as a powerpoint wizard
- written many programs (learnt: Agentsheets, Java, Squeak, .......)
- see the movie “Whale Rider”
- ........................................................................................................
The Fine Line — the Challenge of a Sabbatical

being away $\iff$ avoid that things fall apart