Advanced Interaction Design

Creativity
What is creativity?

- The making of something unknown (for you)
- A novel way to do something
- Reuse of a thing/method in a new context
- Establish a new perspective
- Deliberate or by chance
- Everyone can be creative

- = something outside the box
Theory

A couple of stages

1. **Preparation** – defining what the problem is
2. **Incubation** – putting the problem to rest
3. **Insight** - inspiration
4. **Verify** and **implement**

Any suggestions on how we can do these 4 stages?
Prerequisites

- Understanding the problem
- Master the technology – see beyond details of implementation
- Motivation, endurance
- Concentration
- Discipline
- Hard work is not always a success
  - Physical activities, like walking inspires new thoughts
  - To do something completely different may help
A COUPLE OF APPROACHES
Inversion (ref. Tõnis Tõnisson)

- Use of negations, the opposite
- Negate your problem
- It is about thinking outside the box
  - Making your self free from limitations
  - Not predictable
- Not solving the problem at hand, but changing the problem
  - New walkways
  - Kids playground
Analogy - Metaphor

- Finding analogies or metaphors
  - A thing that reminds us of something else (but different), we see the similarities
    - Camera - eye
- Select something random, and compare different attributes to find analogies
  - A book has a protecting cover, like a car has a body
Audi TT vs. Media player
Screen dump
Xerox Star, 1981

**XEROX GDS Workstation**

User Interface Design

To make it easy to compose text and graphics, to do electronic filing, printing, and mailing all at the same workstation, required a revolutionary user interface design.

Bit-map display. Each of the pixels on the 29” screen is mapped to a bit in memory, thus, arbitrarily complex images can be displayed. The GDS displays all fonts and graphics as they will be printed. In addition, familiar office objects such as documents, folders, file drawers and in-boxes are portrayed as recognizable images.

The mouse: A unique pointing device that allows the user to quickly select any text, graphic or office object on the display.

See and Point

All functions are visible to the user on the keyboard or on the screen. The user can select and retrieve by selecting them with the mouse and touching the MOVE, COPY, DELETE or PROPERTIES command keys. Text and graphics are edited with the same keys.

![Xerox Star, 1981 Diagram](image)

**Shorter Production Time**

Experience at Xerox with prototype workstations has shown shorter production times and, thus lower costs, at a function of the percentage of use of the workstation. The following equation can be used to express this:

\[
\text{Production Time} = \frac{\text{Device Time}}{\text{Use Time}}
\]

**Text and Graphics**

To replace typesetting, the GDS offers a choice of type fonts and sizes, from 6 point to 140 point. A single keystroke can change the size of a selected character or entire line in a sentence of 14 point text. There is a selection of 18 point text, 24-point text, and 36-point text.
Desktop metaphor – the original 1983
RealPhone
Wizard

- Does this confuse help with helpful?
Reduce the conditions

- What if…
- A successful way to generate ideas is to display the assumptions/limits of a certain problem, and then examine what will happen if you change/remove these assumptions
  - What if software was free?
  - What if gravity didn’t exist for one minute each day?
- Extrapolate
  - Will it compress? Can we make it larger?
  - Can it melt? Will it freeze?
    - Eric Drexler - nano
Change old patterns

- View the normal as strange, and the opposite
- Try out something new, walking in a new route, talking to strangers
- Combine two completely different ideas
- Do the unexpected
Bodystorm

http://www.slideshare.net/whatidiscover/method-cards
Use randomization

- Use random words and ideas
  - Cards with images and pictures
  - On-line generators for words
- Important to use the first word/association one gets
  - Then, in a second step, refine and find new associations
Use the right side of the brain

- The left part is language-based, resulting in a certain type of activity
- To use the right side may bring new answers
  - Silent creation, images, pictures, collage
Collaging

1. Paper + magazines + glue
2. Creating Collages with Picasa
   • http://www.computercompanion.com/LPMArticle.asp?ID=227
Ask questions

- A formal scientific deduction and a creative game
- Find causes and contexts
  - Why?
  - What?
  - Where?
  - When?
  - How?
  - Who?
Questions…

- Why do so many die in traffic accidents?
  - Because people do not watch out.

- Why do people not watch out?
  - They are not used to observe their surroundings, and they get easily distracted.

- Why do people not observe their surroundings?
  - The modern society does not premiere or teach observation, but rather abstraction.

- Why is the skill of observation not taught?
  - It might be more difficult to teach observation than to give the students abstract (more easily corrected) tasks.

- Why is observation skill difficult to teach?
  - Because it differs from the traditional school, and no-one has invented any good exercises.

Conclusion: If we can find simple and good exercises for practicing observation skills, then we might reduce the number of car accidents.
Lower your standards

- William Stafford
  - Poem-a-day
  - Writers block
  - Training
- Less harmful critique
Brainstorming

- Stimulates creative thinking in groups.
- Other’s ideas used to find own ideas.
- Moderator – presents the problem and make sure the rules are followed:
  - Positive thinking
  - Interruptions not allowed
  - Never criticize other’s ideas
  - Select the good ideas only afterwards
  - Document
- [http://www.scottberkun.com/essays/34-how-to-run-a-brainstorming-meeting/](http://www.scottberkun.com/essays/34-how-to-run-a-brainstorming-meeting/)
Notes on brainstorming

- All ideas should be documented
- No premature critique
- The tools used must be as efficient as the process, meaning simple tools appropriate
- Practice needed

- Learn to…
  - Use things already there: the room, etc.
  - Change perspective, force yourself to use the method
  - Tools
Weekly assignment

- Yes. See course homepage later today.
Exercise

- Find a design solution for a computer firewall
  - Some traffic is allowed to enter, some is not
    - We need to be able to configure this
  - We want to be sure it is working