Interface Aesthetics Week 2
Beyond Desktop
OUTLINE

- Homework
- Tangible user interfaces
- Ambient media
Homework
Think about your favorite object (could be a physical thing or a virtual thing) and describe its aesthetic quality based on the three levels of processing — Visceral, Behavioral, Reflective.
User interfaces: The current state of affairs
Eyes are in charge and hands are underemployed

[McCullough, 1996]
Eyes are in charge

Eyes guide tools, read notations, appraise designs. Eyes see wholes, and compare many objects simultaneously.

[McCullough, 1996]
Hands bring us knowledge of the world.
Hands bring us knowledge of the world. They are the most subtle, sensitive, probing, differentiated, and the most closely connected to the mind. They deserve to be admired.

[McCullough, 1996]
Hands are underrated

By pointing, by pushing and pulling, by picking up tools, hands act as conduits through which we extend our will to the world.

[McCullough, 1996]
Eyes activate the hands, and hands direct the eyes.
Eyes activate the hands, and hands direct the eyes. Hand-eye coordination distinguishes humanity as the maker of things: *homo faber.*

[McCullough, 1996]
Tools

Aesthetics of the tools lost in the flood of PCs.
Combining the skillful hand with the reasoning mind

Computers let us turn the table—to apply something we know about using tools to achieve richer symbolic processing.

[McCullough, 1996]
Tangible User Interfaces
At the border
TANGIBLE USER INTERFACES

At the border
At the border

We live on the border where bits meet atoms. In the flood of pixels from the ubiquitous GUI screens, we are losing our sense of body and places.

[Ishii, 2006]
Coincidence of input and output spaces
TANGIBLE USER INTERFACES

Curlybot
[Frei, Su, & Ishii, 2000]
TANGIBLE USER INTERFACES

Topobo
[Raffle, Parkes, & Ishii, 2004]
Coincidence of input and output spaces
Tabletop TUI
Coupling tangible representations to digital information and computation
Urp
[Underkoffler & Ishii, 1997]
Illuminating Clay
[Piper, Ratti, & Ishii, 1999]
AudioPad
[Patten, Recht, & Ishii, 2004]
Actuated Workbench

[Pangaro, Maynes-Aminzade, & Ishii 2002]
PICO

[Patten & Ishii 2007]
Augmented everyday objects
Embodiment of mechanisms for interactive control with tangible representations
TANGIBLE USER INTERFACES

I/O Brush
[Ryokai, Marti, & Ishii, 2004]
TANGIBLE USER INTERFACES

TUI vs. GUI
TANGIBLE USER INTERFACES

**TUI**
Tangible bits
Coincidence of input and output space

**GUI**
Painted bits
Generic remote control
TANGIBLE USER INTERFACES

TUI vs. haptic technology
TANGIBLE USER INTERFACES

TUI

Haptic technology

Coincidence of input and mechanical simulation of touch
Tangible User Interfaces
Tangible User Interaction Loop [Ishii, 2006]
Tangible User Interaction Loop [Ishii, 2006]

1st loop with immediate tactile feedback

2nd loop through digital computation
- Tangible representation = control
- & actuated display

3rd loop by actuation by a computer

Information / computation

Physical actuation

Sensing

Digital display

Video/audio feedback
TANGIBLE USER INTERFACES

TUI interaction loop

Combining the skillful hand with the reasoning mind
Ambient Media
Peripheral awareness
Peripheral awareness
What we are attuned to without attending to explicitly.

[Weiser, 1995]
Peripheral awareness
What we are attuned to without attending to explicitly.
[Weiser, 1995]
Calm technology  
Engages both the center and the periphery of our attention, and moves back and forth between the two.  
[Weiser, 1995]
PERIPHERAL AWARENESS

Livewire

[Jeremijenko, 1995]
Locatedness

We are connected effortlessly to a myriad of familiar details.

[Weiser, 1995]
Peripheral Awareness

Foreground and background
<table>
<thead>
<tr>
<th></th>
<th>FOREGROUND</th>
<th>BACKGROUND</th>
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<tbody>
<tr>
<td></td>
<td>bursty</td>
<td>persistent</td>
</tr>
<tr>
<td>HUMAN-HUMAN</td>
<td>conversation, telephone, video conf.</td>
<td>“Portholes”</td>
</tr>
<tr>
<td>HUMAN-COMPUTER</td>
<td>GUIs</td>
<td>smart house technology</td>
</tr>
</tbody>
</table>
[Dourish & Bly, 1992]
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Ambient media

Information conveyed via calm changes in the environment so that users are more able to focus on their primary tasks while staying aware of non-critical but important information that affects them.

[Pousman & Stasko, 2006]
Pinwheels: wind of bits

[Ishii et al., 1997]
Orb
[Ambient Devices]

DOW
"Large blue-chips are rising"

NASDAQ
"Call the broker"

Traffic
"Take the back roads"

Weather
"Wear your heavy coat tomorrow"

Golf
"Schedule a weekend tee time"

Sailing
"Light wind today"
LumiTouch
[Chang, Resner et al., 2001]
iCom
[Agamanolis, 2003]
Design principles

1. Display important but not critical information
2. Can move from the periphery to the focus of attention and back again
3. Focus on representation in the environment
4. Provide subtle changes to reflect updates in information (should not be distracting)
5. Are aesthetically pleasing and environmentally appropriate

[Pousman & Stasko, 2006]
Representational fidelity
Representational fidelity
How the data from the world is encoded into patterns, pictures, words, or sounds.

[Pousman & Stasko, 2006]
Sign
**SIGN**

**Signified**
The physical thing or idea that the sign stands for.

**Signifier**
The representation of the object, which could be a word, a picture, or a sound.

**Sense**
The understanding that an observer gets from seeing or experiencing either the signified or its signifier.

*Warm, hot, burn, bright, dangerous, etc.*
AMBIENT MEDIA

Signs

- Symbolic
- Iconic
- Indexical

[Pousman & Stasko, 2006]
Symbolic signs
Code or rule-following conventions required
Symbolic signs
Language characters, numbers
Symbolic signs
Abstract visual representations

**DOW**
“Large blue-chips are rising”

**NASDAQ**
“Call the broker.”

**Traffic**
“Take the back roads.”

**Weather**
“Wear your heavy coat tomorrow.”

**Golf**
“Schedule a weekend tee time.”

**Sailing**
“Light wind today.”
Iconic signs

An intermediate degree of transparency to the signified object
Iconic signs
Drawings and caricatures
Iconic signs
Metaphors
Indexical signs
Directly connected to the signified.
Indexical signs
Natural signs
Indexical signs
Measuring instruments (scale, thermometer, clock)
Indexical signs
Measuring instruments (weathercock, thermometer, clock)
Indexical signs
Signals
Indexical signs
Recordings (a photograph, a film, video or television shot, an audio-recorded voice), maps, photos.
**Symbolic**

Language characters, numbers, abstract mapping (e.g. colors of “orb”)

**Iconic**

Drawings, caricatures, metaphors

**Indexical**

Measuring instruments, maps, photos
Signs in context of use

- to represent “snow flake”  ==  Iconic
- to represent “cold weather”  ==  Indexical
- to represent “GO for ski”  ==  Symbolic
Course exhibition

1. Artifact
2. Print media
1. Artifact

Website or a physical artifact you are working on.
2. Print media
Describe the process of your design work.
Course schedule

1/28 Introduction
2/04 Beyond Desktop
2/11 Typography I
2/25 Typography II
3/03 Layout & the Grid
3/10 Workshop I: Type / Layout
3/17 Color I
3/31 Color II / Symbols & Iconography
4/07 TBD
4/14 Midterm Critique
4/21 Design for Dynamic Display / Web
4/28 Workshop II: Web design
5/05 Synthesis
5/12 Exhibition

Beyond desktop
Graphic design basics
Week 3
Typography
Homework for week 3

Find two examples of type in your environment (i.e., not from the web).

- Successful type: text that you believe fits its purpose.
- Unsuccessful type: text that you believe does not fit its purpose.

Take a straight photo of each ‘found’ type example, minimizing distortion. For example, don’t take the photo at a strange angle. Post your photos by Sunday, February 10th.
Thanks!