Interface Aesthetics Week 3
Ambient Media
OUTLINE

- Peripheral awareness
- Ambient media
- Discussion of homework
- In-class exercise
Peripheral awareness
PERIPHERAL AWARENESS

In nature
Periphery

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]
Foreground and background
<table>
<thead>
<tr>
<th></th>
<th>FOREGROUND</th>
<th>BACKGROUND</th>
</tr>
</thead>
<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]
Ambient media
**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]
ambient ROOM
[Ishii et al., 1997]
Orb
[Ambient Devices]
Orb
[Ambient Devices]
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]
What kind of information is appropriate for ambient media?
Chaotic vs. peaceful places
IN-CLASS EXERCISE

<table>
<thead>
<tr>
<th>CHAOTIC</th>
<th>PEACEFUL</th>
</tr>
</thead>
<tbody>
<tr>
<td>many people, rush, tension, concerns, nervousness, pain, perceived</td>
<td>alone, dark, sunny, bright, quiet, control, soft light, open space, can</td>
</tr>
<tr>
<td>pressure, smell, cars, fume, flashing lights, large crowds, fast</td>
<td>just observe, no sound, harmony, silence, smooth color regions in view,</td>
</tr>
<tr>
<td>movements, loud noises, distracting, decisions, hard to focus, small</td>
<td>fresh air, warmth, safe, security, stillness, nostalgic, classical</td>
</tr>
<tr>
<td>spaces, lack of control</td>
<td>music, new age music</td>
</tr>
</tbody>
</table>

- Compare the attributes of chaotic places and that of peaceful
- How do chaotic places and peaceful places differ in terms of what are in the foreground and background of our attention?
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.
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
Measuring instruments, maps, photos.
Indexical signs
Measuring instruments, maps, photos.
**Symbolic**

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

**Iconic**

Drawings, caricatures, metaphors

**Indexical**

Measuring instruments, maps, photos
In-class exercise
<table>
<thead>
<tr>
<th></th>
<th>SYMBOLIC</th>
<th>ICONIC</th>
<th>INDEXICAL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VISUAL</strong></td>
<td>Traffic sign with text and numbers</td>
<td>Traffic sign with a caricature</td>
<td>Video feed of people walking, rollover highlight, sun dial</td>
</tr>
<tr>
<td><strong>AUDITORY</strong></td>
<td>Campanile playing concert at 12 noon, Announcement: “Time is now 3pm”</td>
<td>Trash sound when you delete a file, IM “door” sound for login/logout</td>
<td>Spatial audio, footsteps, kettle boiling</td>
</tr>
<tr>
<td><strong>TACTILE</strong></td>
<td>Braille, cellphone vibrating in different patterns</td>
<td>Tactile icons, tactile car seat buttons</td>
<td>Bumpy walkway strip in Tokyo, haptic mouse, seat gets hotter as the remote chair being used</td>
</tr>
<tr>
<td><strong>OLFACTORY</strong></td>
<td>Apple fragrance for Mary, and peach for Kate</td>
<td>Car refresher</td>
<td>Smell of fire</td>
</tr>
<tr>
<td><strong>TASTE</strong></td>
<td>???</td>
<td>Christmas tea</td>
<td>???</td>
</tr>
</tbody>
</table>
IN-CLASS EXERCISE

Design ambient media

1. Take one of the communication or information tasks that seems appropriate for ambient media

2. Create an ambient media piece by using one or a combination of signs

3. Brainstorm the idea, sketch, and present
IN-CLASS EXERCISE

Process
1. Break into groups
2. Pick one of the communication or information tasks that seems appropriate for ambient media (5 min)
3. Brainstorm about creating an ambient media piece by using one or a combination of signs (10 min)
4. Refine and illustrate (20 min)
5. Present (30 min)
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]
Beyond ambient displays
Ambient “input methods”
Presence and activity sensors
Gestural input
Tangible interfaces

[1] Vogel & Balakrishnan, 2004
Beyond fore vs. background
“Load balancing” of senses to reduce cognitive load
Week 4
Augmented reality
Homework for week 4
1. Pick an object you love to use
2. Pick an object you hate to use
3. Think about each object’s form, functionality, and interaction loop
Homework for week 4
Post your blog entry by next Monday, April 2nd, 12 noon.
Thanks!