the interface just left the desktop

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HCI
human-computer interaction
changes and trends

increasing multiplicity
• 1980s - personal computers
  – one man and his machine
  – and they were men!

increasing multiplicity
• 1980s – personal computers
• late 1980’s & 1990s - CSCW
  – lots of people
  – geographically remote
  – but ...
  – one person per machine
  – and ...
  – one machine per person

increasing multiplicity
• 1980s - personal computers
• late 1980’s & 1990s - CSCW
• family use, global networks, ubiquitous devices

families and friends
lots of people, together and remote
how many …

- computers in your house?
- computers in your pockets?

ubiquitous & wearable computing

sensors and devices everywhere

from - dialogue with the computer
to - dialogue with the environment

work and fun

- traditional HCI methods
  - tasks, goals, work, work, work
  - and the odd game
- now
  - e-shopping, communities, home
  - experience and enjoyment
  - more decision points

... and now

- low intention
  - design in sensor-rich environments
- deconstructing experience
  - design for fun!
low intention and sensor-based interaction

car courtesy lights
- turn on
  - when doors unlocked/open
- turned off
  - after time period
  - when engine turned on

  driver’s purpose is to get into the car
  incidentally the lights come on

Pepys
- Xerox Cambridge (RIP)
- active badges
- automatic diaries

  Allan’s purpose to visit Paul’s office
  incidentally diary entry created

MediaCup
- cup has sensors
  - heat, movement, pressure
- broadcasts state (IR)
- used for awareness
  - user is moving, drinking, ...

  Han’s purpose to drink coffee
  incidentally colleagues are aware

shopping cart
- goods in shopping cart analysed
  - e.g. Amazon books
- used to build knowledge about books
  - people who like X also like Y
- used to give you suggestions
  - “you might like to look at …”, “special offer …”

  my purpose to buy a book
  incidentally shown related titles
onCue

- ‘intelligent’ toolbar
  - appropriate intelligence
  - don’t make it hard if it doesn’t
- analyses clipboard contents
- suggests things to do with it

user’s purpose to copy text elsewhere  
*incidentally* alternative things to do

**the intentional spectrum**

<table>
<thead>
<tr>
<th>Intentional</th>
<th>Expected</th>
</tr>
</thead>
<tbody>
<tr>
<td>press light switch</td>
<td>walk into room expecting lights to switch on</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Incidental</th>
</tr>
</thead>
</table>
| walk into room *unknow to you*  
air conditioning increases |

**fluidity**

\[ \text{intentional} \rightarrow \text{co-option} \rightarrow \text{expected} \rightarrow \text{comprehension} \rightarrow \text{incidental} \]

- co-option users explicitly use behaviour e.g. open door for lights
- comprehension users notice, form model then rely on behaviour

**interaction models**

- intentional cycle
  - Norman execution/evaluation loop
- some exceptions
  - multiple goals, displays, opportunistic
- guidelines
  - feedback, transparency

**cognition**

- physical things (inanimate)
  - directness of effect
  - locality of effect
  - visibility of state
- computational things (also animate)
  - complex effects
  - non locality of effect
    - distance – networks; time – delays, memory
  - large hidden state

- understanding
  - innate intelligences
    - physical, natural/animal, social, physiological
  - rational thought
  - imagination
- interfaces
  - GUI, VR, AR, tangible
    - recruit physical/tangible intelligence
  - ubicomp, ambient, incidental
    - homunculi, haunted houses
designing incidental interaction

• need richer representations
  – of the world, of devices, of artefacts
  – wider ecological concerns

• two tasks
  – purposeful task – for interpretation
  – supported task – for actions

decomposing experience

three use words

• useful
  – functional, does things

• usable
  – easy to do things, does the right things

• used
  – pretty, available, acceptable to organisation

changes ...

• professional → personal
  – home, family, friends

• enforced → elective
  – personal choice

• product → service
  – continual choice

John Ruskin

the cursed animosity of inanimate objects
changing media
• original page design

changing media
• original page design
• for the web?
  – straight lines OK
  – crossing hard

understand the effect
surface elements
  – strong box
  – single thick diagonal
  – actual crossing

experienced effects
  – breaking boundaries
  – dynamism by crossing

redesign

understand the effect

<table>
<thead>
<tr>
<th></th>
<th>original image</th>
<th>new image</th>
</tr>
</thead>
<tbody>
<tr>
<td>surface elements</td>
<td></td>
<td></td>
</tr>
<tr>
<td>strong box</td>
<td>Strong box</td>
<td></td>
</tr>
<tr>
<td>single thick diagonal</td>
<td>several thin diagonals</td>
<td></td>
</tr>
<tr>
<td>actual crossing</td>
<td>not present</td>
<td></td>
</tr>
<tr>
<td>experienced effects</td>
<td></td>
<td></td>
</tr>
<tr>
<td>breaking boundaries</td>
<td>gestalt feel</td>
<td></td>
</tr>
<tr>
<td>dynamism by crossing</td>
<td>dynamism multiple</td>
<td></td>
</tr>
</tbody>
</table>

designing experience
• real crackers
  – cheap and cheerful!
  – bad joke, plastic toy, paper hat
  – pull and bang
designing experience

• virtual crackers
  – cheap and cheerful
  – bad joke, web toy, cut-out mask
  – click and bang

how crackers work

The crackers experience

<table>
<thead>
<tr>
<th>Surface elements</th>
<th>real cracker</th>
<th>virtual cracker</th>
</tr>
</thead>
<tbody>
<tr>
<td>design</td>
<td>cheap and cheerful</td>
<td>simple page/graphics</td>
</tr>
<tr>
<td>play</td>
<td>plastic toy and joke</td>
<td>web toy and joke</td>
</tr>
<tr>
<td>dressing up</td>
<td>paper hat</td>
<td>mask to cut out</td>
</tr>
<tr>
<td>experienced effects</td>
<td>offered to another</td>
<td>sent by email message</td>
</tr>
<tr>
<td>shared</td>
<td>pulled together</td>
<td>sender can’t see content</td>
</tr>
<tr>
<td>co-experience</td>
<td>cultural connotations</td>
<td>until opened by recipient</td>
</tr>
<tr>
<td>excitement</td>
<td>contents inside</td>
<td>recruited expectation</td>
</tr>
<tr>
<td>hiddenness</td>
<td>pulling cracker</td>
<td>first page - no contents</td>
</tr>
<tr>
<td>suspense</td>
<td>bang (when it works)</td>
<td>slow ... page change</td>
</tr>
<tr>
<td>surprise</td>
<td>WAV file (when it works)</td>
<td></td>
</tr>
</tbody>
</table>

designing experience

• don’t replicate appearance
• but deconstruct experience
• then reconstruct experience
the lessons ...

- HCI is changing
  - sensor-filled environments, ubicomp
  - changes models of cognition, design, etc.
  - leisure and elective use at work
  - understand and design experience
- but old stuff still important!
  - menus on a phone screen
  - web pages for crackers

what makes an academic discipline?

not the things that change
but the things that don’t change