Ludic computing is the study of design, construction and evaluation of software for interactive play.

“What is a modern computer game made of? It fuses a technical base with a vision for the player’s experience. All of the disciplines involved (design, art, audio, levels, code, and so on) work together to achieve this synthesis.”

Doug Church, Electronic Arts

“What people play games... for the experience the game creates.”

Lazzaro: Why We Play Games (2004)

What do we mean by player experience?
Overview

- Conceptualising experience in general
- Design-oriented theories
- Emotion and cognition
- Typologies of pleasure
- Motivation
- Altered states: immersion and flow

Experience in Usability

- Usability is **dehumanising**. Users are seen as cognitive/information processors without hopes, fears, dreams and aspirations.

- Usability is **work-oriented**. What is the task/goal in leisure activities like listening to music, browsing a photo album, playing a game or online shopping?

- Usability has turned from a satisifier into a **dissatisfier** (a hygienic factor: can only prevent dissatisfaction). Users are increasingly technologically aware, leisure-based and expect usability as given. Competitive advantage requires a broader view of experience.
What is Experience?

More than usability...

Design-Oriented Theories

For practical interactive system design we need theories and methods that...

- Take a rich view picture of experience
- Can be generally understood and applied

Optionally...

- Provide methods to measure experience
- Based on scientific evidence
- Tailored to ludic systems
Emotional Responses
(Norman 2004)

• *Visceral*: fast, automatic reactions
• *Behavioural*: skilled action
• *Reflective*: conscious thought
• Higher levels can enhance and inhibit lower.

Three aspects of design
(Norman 2004)
The link between emotion and cognition

• Negative affect narrows focus. Concentration on detail, ignoring distractions to resolve problems. Motivated by immediate survival.

• Positive affect broadens focus. Receptive to interruptions, interested in novelty, curious and creative. Better at learning.

• Design can induce appropriate positive or negative affect, e.g. alarms.

Emotional Responses

Game Design

Alien vs. Predator
Dark, flashes, shocks
Negative affect
Intense focus on survival

Little Big Planet
Bright, funny, homemade
Positive affect
Creative problem solving
The Four Pleasures
(Tiger 1992)

• **Physio-pleasure.** Derived from sensations, e.g. pleasure in touch, taste, smell, the body. [Visceral]

• **Psycho-pleasure.** Pleasurable cognitive and emotional reactions, e.g. performance without error or stress, achievement. [Behavioural]

• **Ideo-pleasure.** Related to values, e.g. suits personal aesthetics or embodies environmental responsibility. [Reflective]

• **Socio-pleasure.** Derived from relationships with others, e.g. personal relationships, status and image. [Reflective]
The Four Pleasures
(Tiger 1992)

Psycho-pleasure

Physio-pleasure

Socio-pleasure

Ideo-pleasure
Typology of Game Pleasures  
(Marc LeBlanc)

• **Sensation**: beautiful visual, audio and tactile experiences. Orthogonal to gameplay design: beautiful but dull, or basic but engaging, e.g. ASCII games like NetHack.

• **Fantasy**: losing yourself in a fictional constructed world. The game sustains a sense of being in a different reality.

• **Narrative**: periods of increasing dramatic tension, leading to resolution.

• **Challenge**: a well-balanced and compelling struggle to overcome obstacles.

Typology of Game Pleasures  
(Marc LeBlanc)

• **Fellowship**: a shared sense of community, either in or outside a game, e.g. World of Warcraft guilds.

• **Discovery**: exploring an unknown world, revealing hidden information and discovering new combinations.

• **Expression**: adopting a playing style or customising your avatar.

• **Submission**: submitting yourself to the structure of a game, making the game important.
Typology of Game Pleasures
(Marc LeBlanc)

Quake’s primary pleasures are Challenge, Sensation, Fantasy and Submission.

The Sims primary pleasures are Discovery, Fantasy, Expression, Narrative.

Motivating Experiences
Lazzaro (2004)

**Goal:** investigate the role of emotion in games and identify new ways to create emotion

**Methodology:**

- **Participants:** research study with 15 hardcore gamers, 15 casual players, 15 non-players
- **Set-up:** field study in which 30 adults were asked to share thoughts and feelings while playing their favourite game in their normal situation
- **Observation technique:** Observed during play and completed a questionnaire afterwards. Interviews with non-players.
Motivating Experiences
Lazzaro (2004)

Methodology (cont):

Three types of data:

i) video recordings of what the players said and did

ii) questionnaire responses

iii) verbal and non-verbal emotional cues during play

Four keys to unlocking emotion during play

1) **Hard fun**: Play in order to overcome obstacles. They enjoy challenge, strategy and problem solving. Play generates frustration and fiero (triumph over adversity).

2) **Easy fun**: The sheer enjoyment of experiencing the game activities. Enjoy intrigue and curiosity. Generates wonder, awe and mystery.
Four keys to unlocking emotion during play

3) **Altered states**: How a game makes them feel inside. They play for internal sensations such as excitement or relief from their thoughts.

4) **People factor**: Games as a social mechanism, communicating inside or outside game. They enjoy competition or collaboration, experiencing amusement, schadenfreude (enjoy others misfortune) and naches (pride of a mentor).

More emotion in groups, where play is extended with new behaviours and rituals.

Conclusions

Lazzaro (2004)

People play games to change or structure their internal experiences; they enjoy emotions and thoughts which are unrelated to work; they enjoy escaping social norms, or the real world; they enjoy a feeling of challenge and complete absorption.
Altered States

• Players’ experience more than emotional reaction to games. They also change the way they perceive and attend the world.

• Emotion can influence this (cf. Norman).

• Two influential concepts
  • Immersion
  • Flow

Immersion in the Game

• Players often say they are “immersed” in a game. Immersion is a widely used term by game reviewers and designers. Brown & Cairns (2004) interviewed gamers to identify what they thought immersion was.

• **Engagement**: player spends time, effort and attention playing. The *barriers* to this are player investment and preference.

• **Engrossment**: controls invisible, emotions affected, less aware of surroundings, less self-aware including time. The barrier is game design.

• **Total immersion**: a feeling of being in game, cut off from reality, only game matters. The barriers are empathy and the game’s demand for attention.
### Altered states of consciousness

<table>
<thead>
<tr>
<th>Type</th>
<th>ε</th>
<th>δ</th>
<th>θ</th>
<th>α</th>
<th>β</th>
<th>γ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hz</td>
<td>0 - 0.05</td>
<td>0.05 - 4</td>
<td>4 - 8</td>
<td>8 - 12</td>
<td>12 - 30</td>
<td>30 - 100+</td>
</tr>
<tr>
<td>State</td>
<td>intense states?</td>
<td>slow wave sleep</td>
<td>normal deep sleep</td>
<td>typical dream state</td>
<td>normal conscious activity</td>
<td>complex actions</td>
</tr>
</tbody>
</table>

### Entrainment

- The process whereby two interacting oscillating systems, which have different periods when they function independently, assume a common period
- **Audio-visual entrainment** (AVE) uses flashes of lights and pulses of tones to guide the brain into various states of brainwave activity
Flow


- **The Flow State:** A person achieves a emotional and psychological state of focused and engaged happiness through an activity.

- Possible through huge variety of activities, e.g. assembly line work, problem-solving, rock climbing, performing surgery, and playing computer games.

Elements of enjoyment

(Csikszentmihalyi 2002)

- A challenging activity that requires skill
- The merging of action and awareness
- Clear goals and feedback
- Concentration on the task at hand
Elements of enjoyment
(Csikszentmihalyi 2002)

• The paradox of control
• The loss of self-consciousness
• The transformation of time

Flow

**Causes**
- an achievable task
- the ability to concentrate
- clear goals
- immediate feedback

**Consequences**
- deep but effortless involvement
- a sense of control over actions
- concern for self disappears
- sense of time altered
- activity is seen as intrinsically rewarding
Flow

Flow occurs when challenge matches skill. Increased challenge can lead to anxiety. Increased skill can lead to boredom.

Flow definitely occurs in games, but is distinct from immersion, which may be graded (engrossment vs. total) and involve negative affect. Immersion may be a precursor to flow.

Summary

- Experience is important to game design
- Experience is more than usability
- Design oriented models of emotion; emotion and cognition; typologies of pleasure; motivating experiences; altered states - immersion and flow
- Lots of potential for game design!
Required reading
(Examinable)


Bibliography
(For further reading, not examinable!)

- Jordan (2000) Designing Pleasurable Products
- Tiger (1992), see Jordan (2000)