UNIVERSITÉ DE FRIBOURG
UNIVERSITÄT FREIBURG

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GAME DESIGN

ACT 4

Maurizio Rigamonti

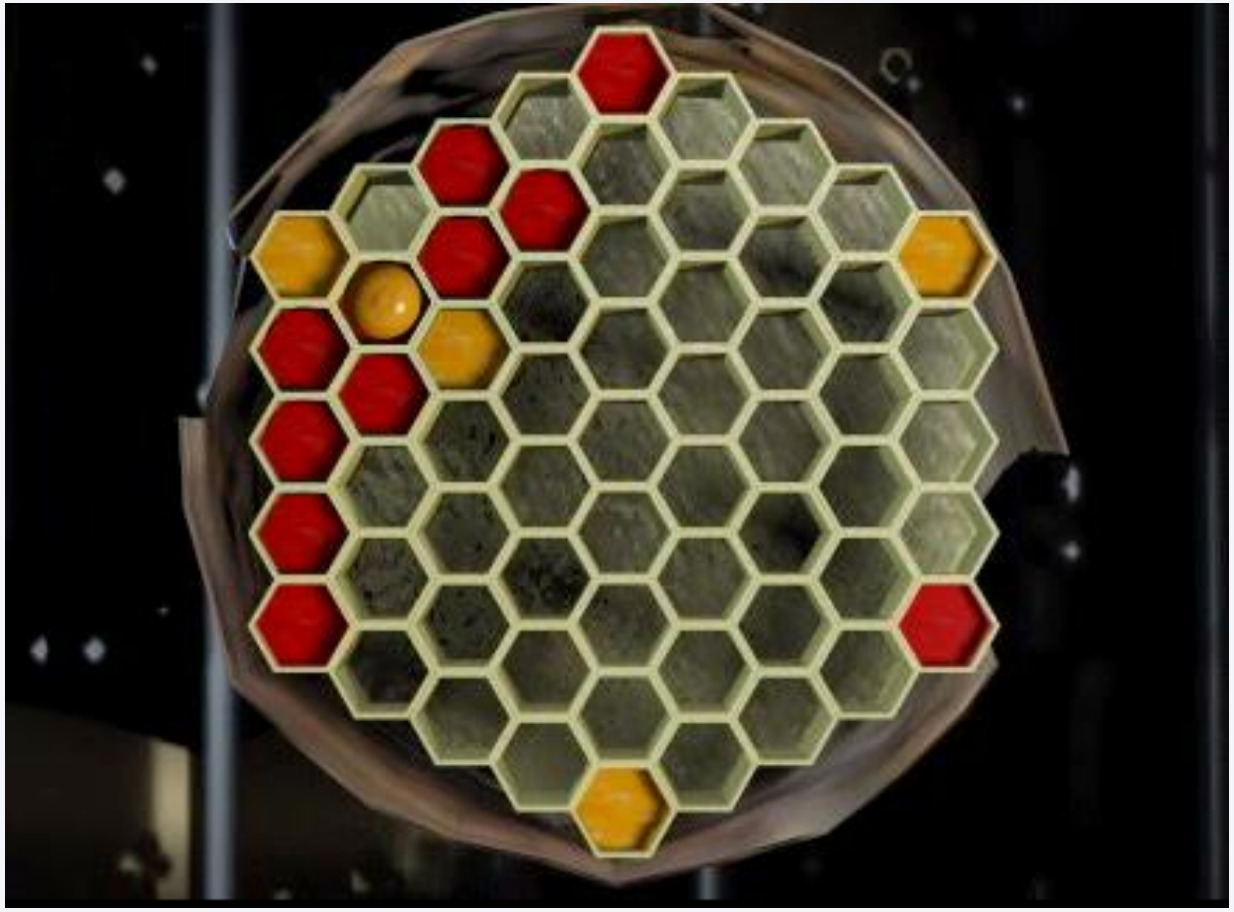
Mechanics supports Puzzles

PUZZLES

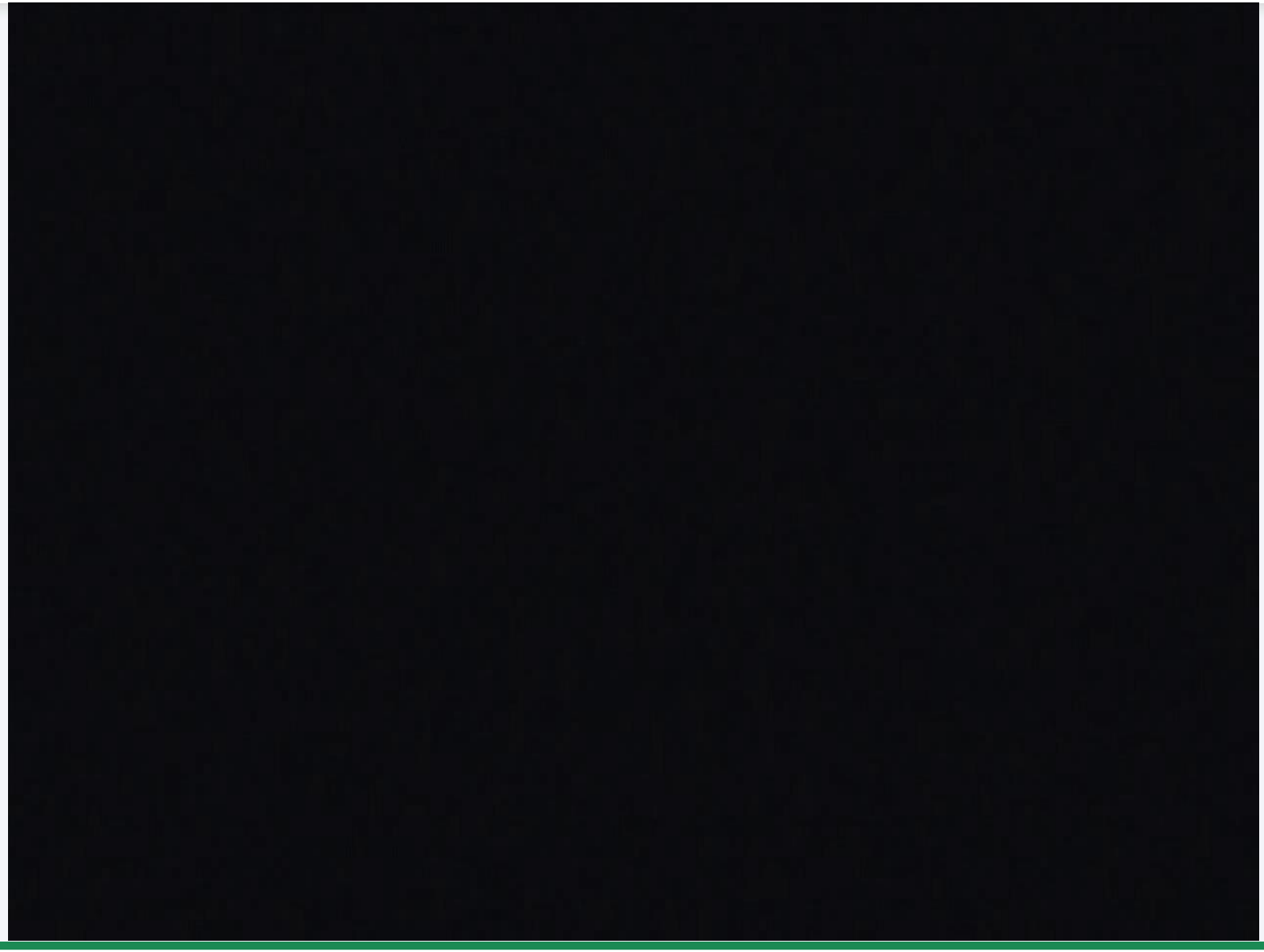
- Sometimes visible in games, sometimes enmeshed
- Make the player **stop** and **think**
- Are puzzles games?
  - Not replayable
  - Afflicted by dominant strategies
  - *A puzzle is a game with a dominant strategy*

PUZZLES EVOLUTION

- 1980s – early 1990s
  - Explicit
  - Incongruous
  - Monkey Island, **The 7th Guest**
- Now
  - Integrated in the environment
  - Zelda, Tomb Raider, Resident Evil
  - And in FPS, racing games, fighting games
- 10 design principles to create good puzzles



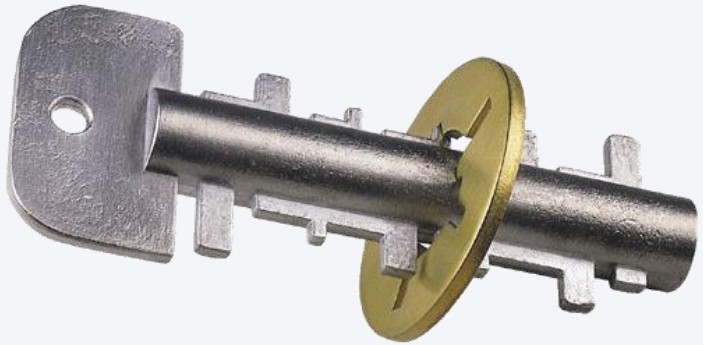
THE SEVENTH GUEST



P1: GOAL EASY TO UNDERSTAND

- Goal?
  - Compose the shape?
  - Match the colors?
  - Loss of interest and fun!

- Goal?
  - Get the disk off of the key



P2: MAKE IT EASY TO GET STARTED

- Slide tiles
- Series of moves not obvious, but very clear how to start

- Clear goal, but how to begin?
- Long trial-and-error session

```
  CEI
 X DA
-----
  GCH
+DFB
-----
 ADHF
```

P3: GIVE A SENSE OF PROGRESS

- Difference between riddles and puzzles: **progress**
- Turn the riddle into a puzzle: “20 questions”
- Rubik’s cube

P4: GIVE A SENSE OF SOLVABILITY

- Suspect of not solvability: players give up
- How to avoid it?
  - Visible progress
  - Show solution (e.g. the Rubik’s cube is shipped in its solved state)

P5: INCREASE DIFFICULTY GRADUALLY

- Like for games!

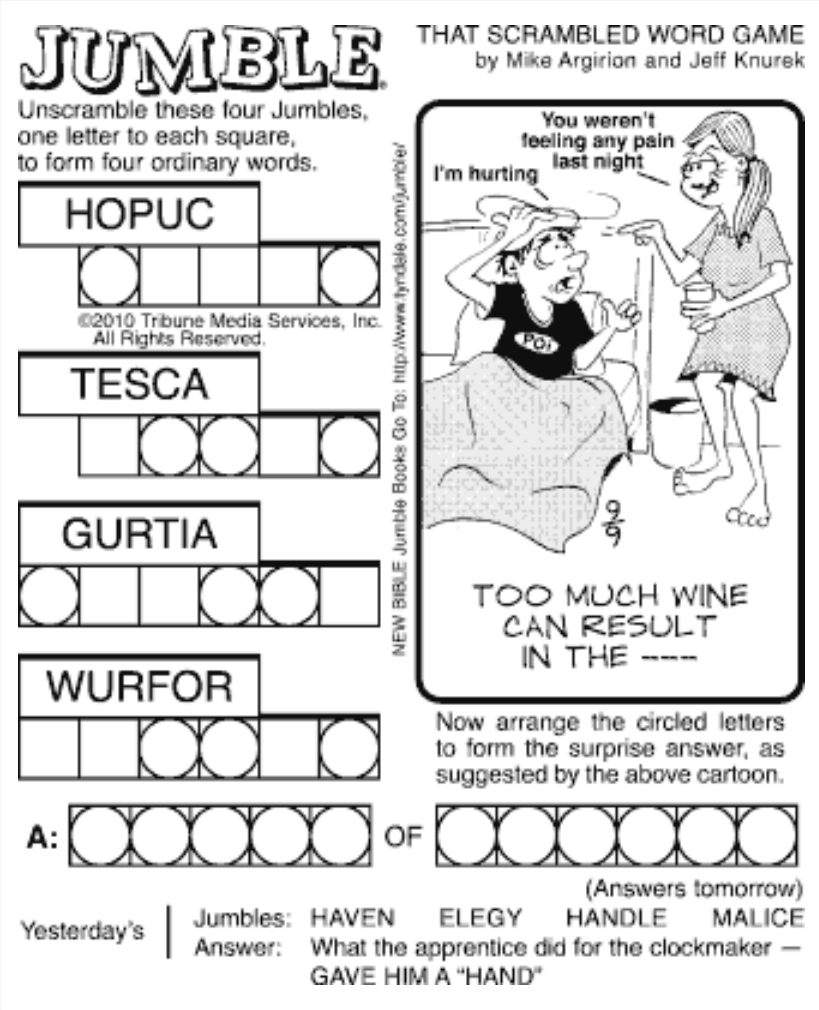
- Classic jigsaw
  1. Flip all the pieces
  2. Find corners
  3. Connect edges
  4. Sort pieces by color
  5. …
  6. Assemble piece that could go anywhere

P6: PARALLELISM LET PLAYER REST

- Players unable to solve a puzzle could abandon entirely the game
- Propose several related puzzles and let players switch among them
- Take a break and retry!
- Sudoku, crosswords
- RPG: 2 or more parallel challenges at once

P7: PYRAMID STRUCTURE

- Series of small puzzles giving clues to a larger puzzle
  - 1 Clear goal
  - Parallel puzzles
  - Gradual difficulty



P8: HINTS INCREASE INTEREST

- Hints can renew the hope and interest of frustrated players
- Hints can have a prize
  - E.g. less points
- From more cryptic suggestion to more straightforward hint
- Deathspank

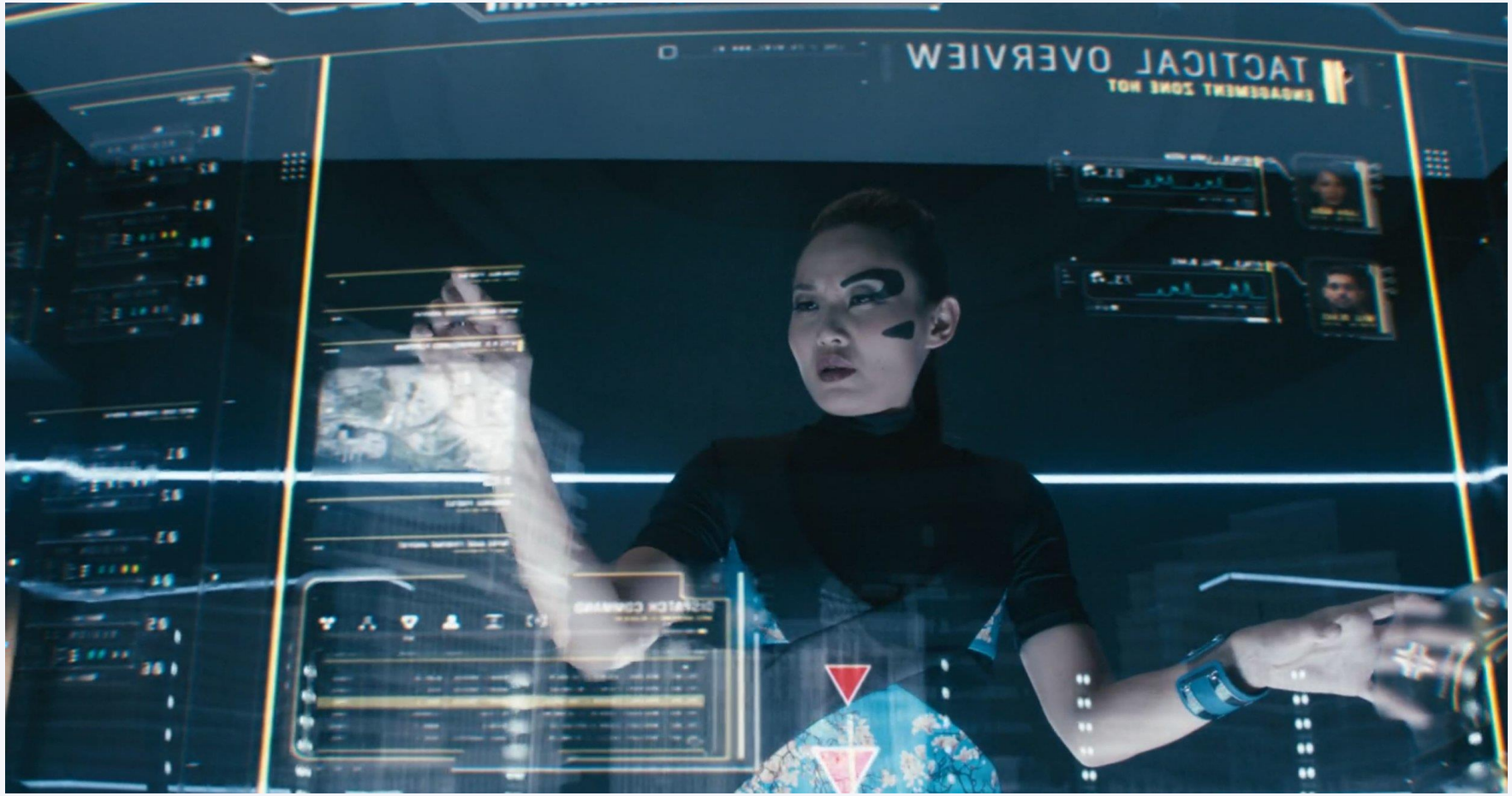
P9: GIVE THE ANSWER!

- The answer is probably more important than solving a puzzle
- Think about mystery novels
  - Sense of surprise when discovering the assassin!
  - Finding the solution too early compromises the reading experience

P10: PERCEPTUAL SHIFTS

- “Can you arrange six matchsticks so they form 4 equilateral triangles?”
- Double-edged sword: either you get or not!
  - Great pleasure for players able to solve them
- Almost like riddles

Players play through an interface



THE INTERFACE

- The intermediary between the player and the game
- If the interface fails, the experience is compromised
- A good interface is
  - Robust
  - Powerful
  - As **invisible** as possible
- The good interface makes players feel in control of their experience

VICTORIA


Territorial Management
Military Management
Nikki
Togo
Catholic
Prestige 113 7th
Ind. Power 1 75th
Mil. Power 0 93rd
41
Independent Nation
Relations
War:
Allies:
Nikki
Resource
Terrain
Transport
Naval Base
Life Rating
Nationality
Hausa 74.6%
Ibibio 25.4%
Ledger
Settings
Manpower 2
Leadership 11
Research Points 0
June 19, 1960
Prestige 25
Current Funds 91
DI Points 2
GAME PAUSED
Doume
Owned by Cameroon (Relations: 0)
Primary Culture: Fang
Resource: Timber
June 6, 1960 : Colombia concluded a diplomatic deal with South Vietnam .
June 8, 1960 : Chile concluded a diplomatic deal with South Vietnam .
June 8, 1960 : We went with We must abolish the military! in Stop Militarism Now! Rallies in Kiho.
June 15, 1960 : Republic of China declined the diplomatic deal suggested by Czechoslovakia.
June 19, 1960 : USA went with Support for the Moderate country in Power game .

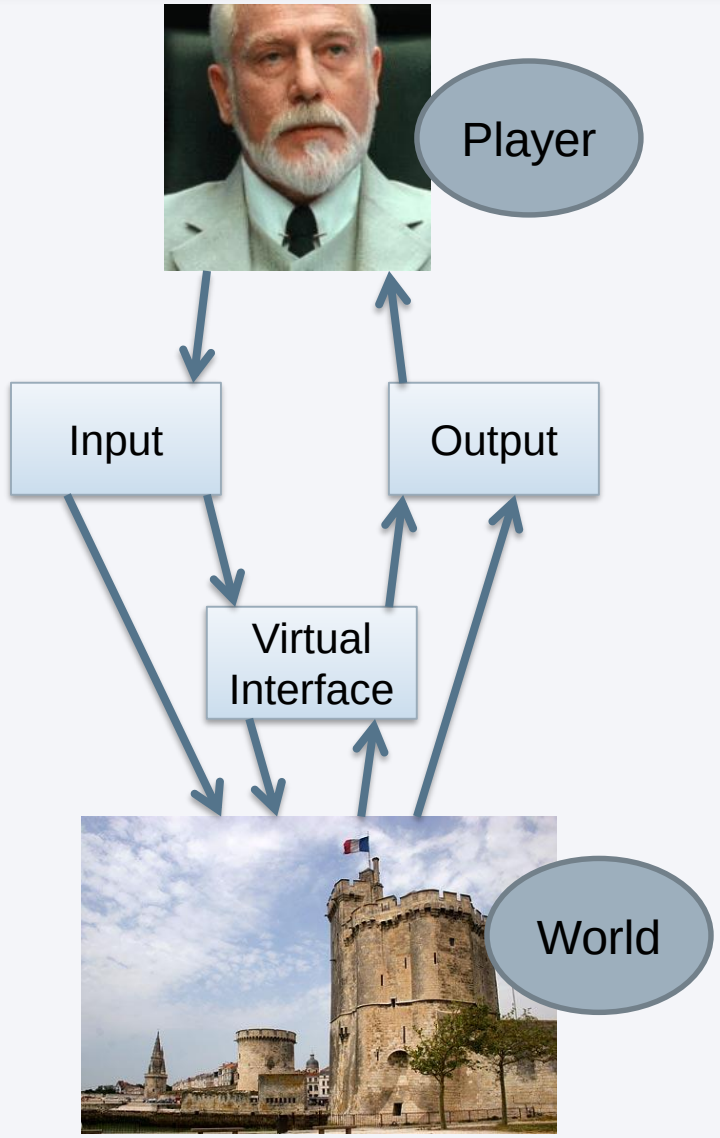
WORLD OF WARCRAFT

INTERFACE CATEGORIES

- Physical input
  - Joypad, mouse, joystick, etc.
- Physical output
  - Screen, audio devices, VR systems, etc.
- **Virtual interface**
  - Elements that do not belong to game's world
  - Input: menus, buttons, etc.
  - Output: scoreboard, augmented information, etc.

MAPPING

- **Input > world**
  - The avatar jumps
- **World > output**
  - A view of the world
- **Input > virtual interface**
  - Assign experience points
- **Virtual interface > world**
  - Healing potion on the avatar
- **World > virtual interface**
  - Display stats during a battle
- **Virtual interface > output**
  - Shown data



THE LOOP OF INTERACTION

- From player to game to player to game…
- **Feedbacks**
  - Influence what players do next
  - Affect player's understanding and enjoying
- Experiences without feedbacks:
  - Frustrating
  - Confusing
  - Traffic lights USA and CH
- Feedbacks have to be immediate

INTERFACE AND NARRATIVE

- 4 types of interfaces linked to narrative and game geometry
  - Diegetic
  - Meta
  - Spatial
  - Non-diegetic

FAGERHOLT & LORENTZON'S MODEL

Is the representation visualized in the 3D game space?

Is the representation existing in the fictional game world?

	no	yes
no	non-diegetic representations	spatial representations
yes	meta representations	diegetic representations

DIEGETIC

- Interface elements exist within the game world
  - Player **and** avatar can interact with them
  - Enhance the narrative experience for the player
  - More immersive and integrated experience
  - Sometimes no HUD (Head Up Display)

META

- Sometimes UI elements don't fit within the geometry of the game world
  - Can maintain narrative
  - Sit on 2D hub plane

SPATIAL

- Spatial UI elements
  - Need to break the narrative
  - More information than the avatar should be aware of
  - Sit within the geometry of the game's environment
  - Immerse the player
  - Prevent to break the experience by jumping to menu screens.

NON-DIEGETIC

- Non-diegetic elements
  - Freedom to be removed from the game's fiction and geometry
  - Can adopt their own visual treatment

CHANNELS OF INFORMATION

- One of interfaces main goals: **communicate information**
- Games can contain a **huge amount** of information to display **at the same time**
- How to present in an efficient way information?
  - 4 steps in the following slides
  - Zelda used as example

S1: LIST AND PRIORITIZE INFORMATION

- The game contains a lot of information, with different importance
- Example
  - **Need to know always**
    1. Immediate surrounding
  - **Need to consult from time to time**
    2. Number of rubies
    3. Health
    4. Distant surrounding
    5. Current weapon and treasure
    6. Number of bombs and arrows
  - **Need to consul occasionally**
    7. Other inventory

S2: LIST CHANNELS

- **Channel**: way of communicating a stream of data
  - Different parts of the screen
  - The avatar and the enemies
  - Music and SFX
- Example
  - Main display area
  - Dashboard of information at the top of the screen
  - Additional modes

S3: MAP INFORMATION TO CHANNELS

- Complex task requiring
  - Experience
  - Instinct
  - Trial and error
- Example (numbers correspond with the list in slide)
  - Main display area <> 1
  - Dashboard of information at the top of the screen <> 2 - 6
  - Additional modes <> 7 + 2 - 6

Need to know always

1. Immediate surrounding

Need to consult from time to time

2. Number of rubies
3. Health
4. Distant surrounding
5. Current weapon and treasure
6. Number of bombs and arrows

Need to consul occasionally

7. Other inventory

MAPPING EXAMPLE

Rubies, bombs, arrows (3 digit number)

Special object

Health

Dashboard

Main area

Inventory

S4: REVIEW USE OF DIMENSIONS

- A channel has several dimensions
  - Textual information
  - Colors
  - Font types and sizes

- Using more dimensions **reinforce** information
  - E.g. the bar of energy for fighting games

MODES

- **Mode**: a change in one of the mapping arrows
  - E.g. changing the functionality of a button
- Add variety to the game
- Risk of confusing the player

HOW TO AVOID TROUBLES

- Use as few modes as possible
  - The player has to understand and learn each mode!
- Avoid overlapping modes
  - E.g. don’t assign aiming and walking to the same stick
- Make different modes look as different as possible
  - Changes visible on the screen (weapons in Halo)
  - Change the action the avatar is taking (Mario)
  - Change data on the screen (Final Fantasy 7 battle mode)
  - Change camera perspective

TRICKS FOR INTERFACES DESIGN (1/2)

- Steal good design and adapt them (top-down approach)
  - Improve concepts
- Design the interface from scratch (bottom-up approach)
  - Explore new ways
- Theme the interface
- Simulate touch with sounds
  - Our mind associates touch and sound!

TRICKS FOR INTERFACES DESIGN (2/2)

- Use metaphors
  - The player understand faster something that she saw before
- Test, test, test
  - As early as possible, as often as possible
  - “Paper prototypes” are really useful
- Break the rules to help your player
  - Wrong ideas can become rules of thumb: e.g. don’t use the right button of the mouse in game for children!

Next act: Interest curves

QUESTIONS?