

GAME DESIGN

SYSTEMS, GENRES, MECHANICS

TOMÁŠ POLÁŠEK IPOLASEK@FIT.VUT.CZ

BRNO UNIVERSITY OF TECHNOLOGY

FACULTY OF INFORMATION TECHNOLOGY

DCGM, CPhoto@FIT

FACULTY OF FINE ARTS

GAME MEDIA STUDIO

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PROBLEM DEFINITION

The focus of a game designer is designing game play, conceiving and designing rules and structures that result in an experience for players.

Salen & Zimmerman
Rules of Play - Game Design Fundamentals [8]

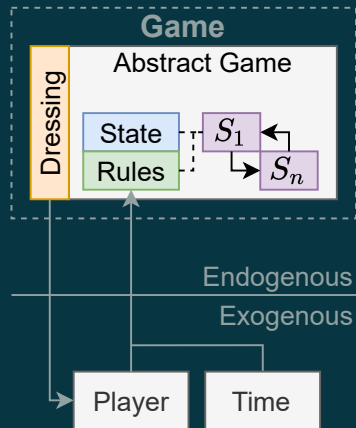
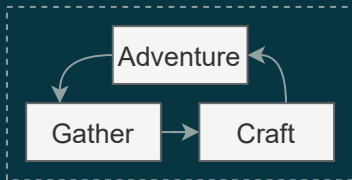
REMINDER FROM LAST TIME

■ Abstract Game = Formal System

- ▶ State = Internal state, modified by interaction
- ▶ Rules = A set of constraints and transitions
- ▶ Structures = Entities with State and Rules

■ Gameplay = Interactivity of Player ↔ Game

■ Core Gameplay Loop = Flow of the Game



SYSTEM DESIGN

GAME SYSTEMS

- Implementation of Gameplay
- Engineer, Artist, and Designer

System	Technical		Functional
Input	Polling	vs	Feeling
Sound	Playback	vs	Feedback
Render	Fidelity	vs	Signalling
Physics	Simulation	vs	Interaction
AI	Decision	vs	Opposition
Network	Net-code	vs	Balance

- Encapsulation × Interaction
- Endogenous & Exogenous Processes

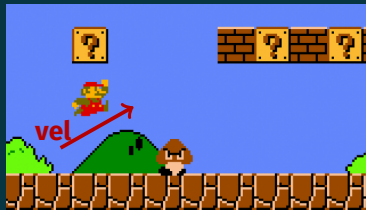
Input

Technical



```
if (gp.dpad.right.isPressed()) {  
    m.vel += speed * Vec2(1, 0);  
}
```

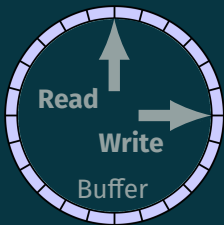
Functional



$$vel = 1 - 2 (t_{air} - 0.5)^2$$

Sound

Technical



```
buffer[wrtIdx++] = sin(omega * t)
```

Functional



Source: Half-Life 2

Render

Technical



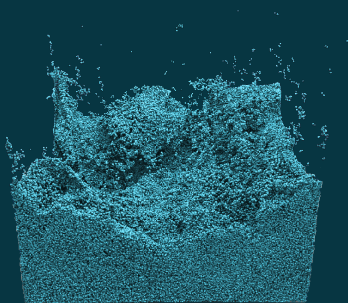
Functional



Source: Borderlands 2

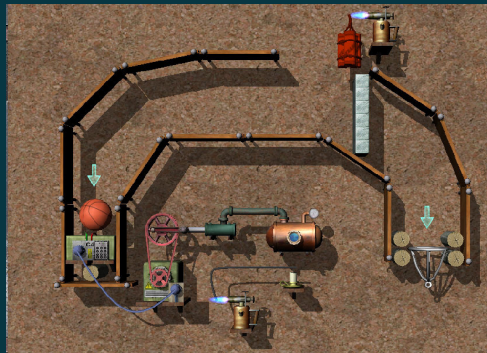
Physics

Technical



Source: Particle-Based Fluid Simulation
Ting-Chun Sun

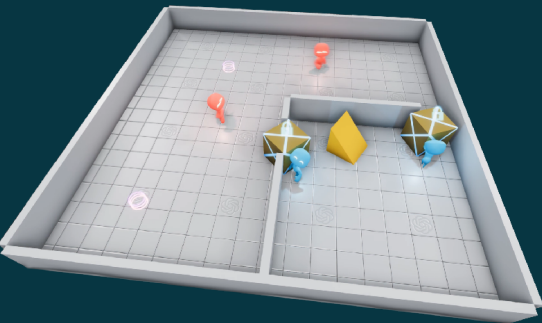
Functional



Source: Crazy Machines

Artificial Intelligence

Technical



Source: OpenAI

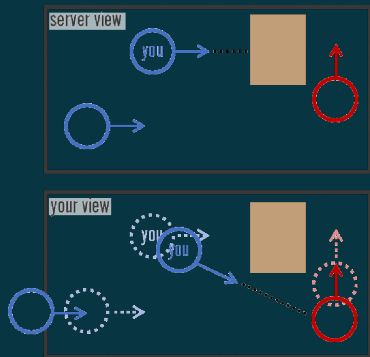
Functional



Source: Assassin's Creed Unity

Network

Technical



Source: Riot Games

Functional



Source: Valorant

GAME SYSTEMS

- Implementation of Gameplay
- Engineer, Artist, and Designer

System	Technical		Functional
Input	Polling	vs	Feeling
Sound	Playback	vs	Feedback
Render	Fidelity	vs	Style
Physics	Simulation	vs	Interaction
AI	Decision	vs	Opposition
Network	Net-code	vs	Balance

- Encapsulation × Interaction
- Endogenous & Exogenous Processes

GAME GENRES

CATEGORIZATION OF GAMES

- Game studies → Ludology
- Ludology × Narratology ¹
- Game Genres
- Tools of Evaluation
- No Single Game Taxonomy
- Gameplay Loop -> Experience

... the computer game for all practicality can not tell stories – the computer game is simply not a narrative medium ...

Jasper Juul

A clash between game and narrative [5]

¹See Apperley [1], Csikszentmihalyi [2], Frasca [3, 4], Juul [5, 6]

GAME GENRES I

Action

Fighter



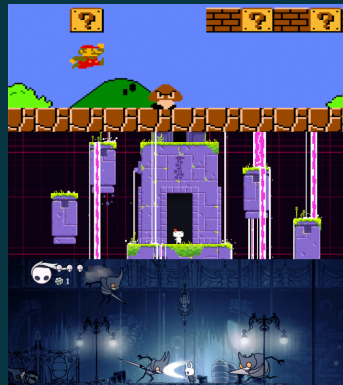
Source: Street Fighter II (1987)
Mortal Kombat (1992)
Super Smash Bros. Ultimate (2018)

Shooter



Source: Ultimate Doom (1995)
[Half-Life (1998, 2004)] Call of Duty (2003)
Crysis 3 (2013)

Platformer



Source: Super Mario Bros. (1985)
SMB (2010) Fez (2012)
Hollow Knight (2017)

GAME GENRES II

Adventure

Text



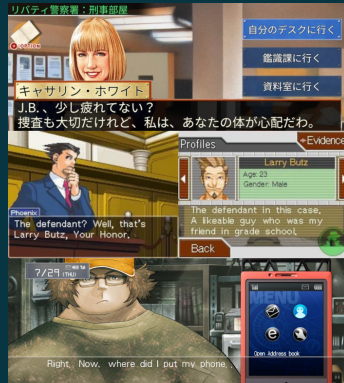
Source: Zork (1980)
Sorcery! (2013)
Cragne Manor (2018)

Graphic



Source: Secret of Monkey Island (1990)
Myst (1993)
Thimbleweed Park (2017)

Visual Novel



Source: J.B. Harold Murder Club (1991)
Phoenix Wright: Ace Attorney (2001)
Steins;Gate (2009)

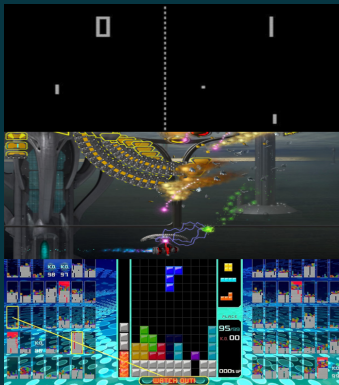
Sports

Racing



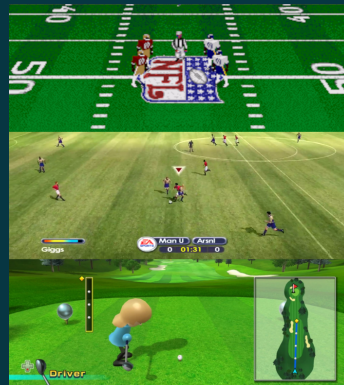
Source: Super Mario Kart (1992)
Need for Speed: Underground (2003)
Dirt Rally (2015)

Arcade



Source: Pong (1972)
Ricochet Infinity (2007)
Tetris 99 (2019)

Imitation



Source: Madden NFL 96 (1995)
FIFA 2001 (2000)
Wii Sports (2006)

GAME GENRES IV

Simulation

Driving



Source: F1 Racing Simulation (1997)
Microsoft Flight Simulator X (2006)
Euro Truck Simulator (2008)

Fiction



Source: Elite (1984)
X3: Reunion (2005)
Star Citizen (????)

Wargame



Source: Panzer General (1994)
Dominions 3 (2006)
Shadow Empire (2020)

Role-Playing

Sandbox



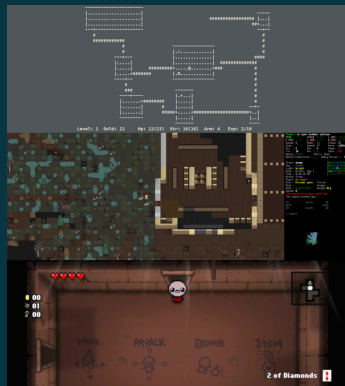
Source: The Elder Scrolls: Arena (1994)
Baldur's Gate (1998)
The Outer Worlds (2019)

Action



Source: The Legend of Zelda (1986)
Diablo (1997)
Dark Souls (2011)

RogueLike



Source: Rogue (1970)
Cataclysm Dark Days Ahead (2013)
Binding of Isaac: Rebirth (2014)

GAME GENRES VI

Strategy

Real-Time



Source: Command & Conquer (1995)
Age of Mythology (2002)
Iron Harvest (2020)

Turn-Based



Source: Sid Meier's Civilization (1991)
Heroes of Might and Magic III (1999)
Endless Space (2013)

Management



Source: The Settlers (1993)
Dwarf Fortress (2006)
Anno 1404 (2009)

Multiplayer

Scope



Source: Halo 2 (2004)
Team Fortress (2007)
Guild Wars 2 (2012)

Cooperative



Source: Eve Online (2003)
Magicka (2011)
Animal Crossing: New Horizons (2020)

Competitive

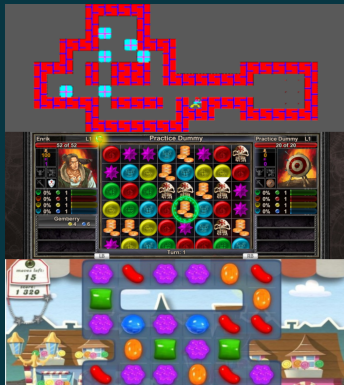


Source: Starcraft II (2010)
Rocket League (2015)
Legion TD 2 (2017)

GAME GENRES VIII

Casual

Puzzle



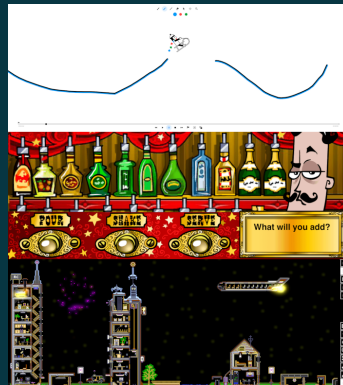
Source: Sokoban (1982)
Puzzle Quest (2007)
Candy Crush Saga (2012)

Gated



Source: FarmVille (2009)
Clash of Clans (2012)
Kittens Game (2016)

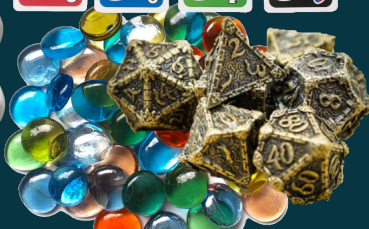
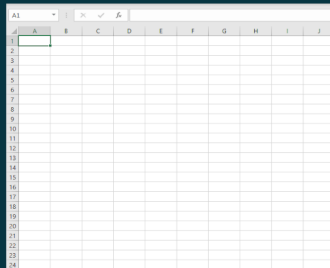
Toy



Source: Line Rider (2006)
Bartender: The Right Mix (2007)
The Powder Toy (2008)

GAME DESIGN

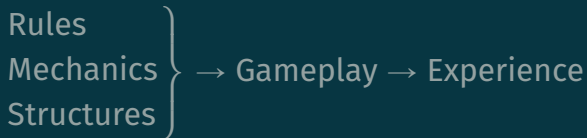
"Game Design"?



WHAT IS GAME DESIGN?

- History : From Hardware ↑
- Today: **Gameplay** from **Rules** and **Structures** [8]

Designer's Lot



- Common Principles

PROBLEMS AND SOLUTIONS

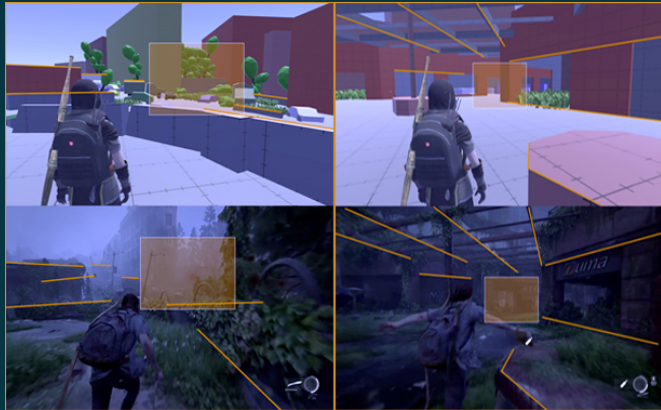
- Reaching the **Goal** (Experience)
- Systematic → Iterative Process
- Tools of the Trade
 - ▶ Skill × Strategy × Luck
 - ▶ Modes of Play
 - ▶ Goals & Rewards
 - ▶ Events
 - ▶ Time Flow
- **Experimentation** is Key!
- Video Game Design Disciplines
- Much More → Game Studies ¹



¹See Game Studies course, and further literature, e.g., Salen [8, 7]

ADDITIONAL RESOURCES

- [YouTube] Raph Koster: Practical Creativity
- [YouTube] Katherine Neil: Game Design Tools
- [Blog] Raph Koster's Website



Source: The Last of Us II Level Design Study

Thanks For
Your Attention!



ARMOR

100

HEALTH

Blood: Fresh Supply

5

AMMO

V1.6.10

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REFERENCES I

- [1] THOMAS H APPERLEY. **“GENRE AND GAME STUDIES: TOWARD A CRITICAL APPROACH TO VIDEO GAME GENRES”**. In: *Simulation & Gaming* 37.1 (2006), pp. 6–23.
- [2] MIHALY CSIKSZENTMIHALYI. **“DOES BEING HUMAN MATTER? ON SOME INTERPRETIVE PROBLEMS OF COMPARATIVE LUDOLOGY”**. In: *Behavioral and Brain Sciences* 5.1 (1982), pp. 160–160.
- [3] GONZALO FRASCA. **“LUDOLOGISTS LOVE STORIES, TOO: NOTES FROM A DEBATE THAT NEVER TOOK PLACE.”**. In: *DiGRA conference*. 2003, pp. 4–6.
- [4] GONZALO FRASCA. **“SIMULATION VERSUS NARRATIVE: INTRODUCTION TO LUDOLOGY”**. In: *The video game theory reader*. Routledge, 2013, pp. 243–258.
- [5] JESPER JUUL. **“A CLASH BETWEEN GAME AND NARRATIVE: A THESIS ON COMPUTER GAMES AND INTERACTIVE FICTION”**. In: *University of Copenhagen* (1999).
- [6] JESPER JUUL. **“THE DEFINITIVE HISTORY OF GAMES AND STORIES, LUDOLOGY AND NARRATOLOGY”**. In: *The Ludologist* (2004).

REFERENCES II

- [7] KATIE SALEN, KATIE SALEN TEKINBAS, AND ERIC ZIMMERMAN. ***THE GAME DESIGN READER: A RULES OF PLAY ANTHOLOGY***. MIT press, 2006.
- [8] KATIE SALEN AND ERIC ZIMMERMAN. ***RULES OF PLAY: GAME DESIGN FUNDAMENTALS***. Boston: MIT Press, 2003. URL: <http://mitpress.mit.edu/catalog/item/default.asp?ttype=2&tid=9802>.