

# Computer Games 2015

## Game Design

Dr. Mathias Lux  
Klagenfurt University

# Organizational



- **Assignment I: Pong**
  - I haven't got assignment I from 10 people
  - check on the homepage for instructions
- **Assignment II:**
  - Don't forget to submit until May 3rd
- **Final Project:**
  - Game Jam!!

# Sources



K. Salen, E. Zimmerman, Rules of Play  
Game Design Fundamentals, MIT Press  
2004 (if not otherwise noted)

# Iterative Design



- Play-based design approach
- Not purely theoretical
- Typical for paper & tabletop games

# Iterative Design



- Prototyping as early as possible
  - after 20% project time at least
  - not visual, but interactive
- Prototype is
  - played
  - adjusted
  - evaluated
  - refined

# Example: Pago



# Iterative Design



## Why is it important?

*“We cannot anticipate a game in advance.”*

- Is the game accomplishing its design goals?
- Do players understand what they are doing?
- Are they having fun?
- Do they want to play again?

# Core Concepts of Game Design



- Meaningful Play
- Design
- Systems
- Interactivity

# Meaningful Play



*Meaningful play is the goal of successful game design*

- *Meaningful* w.r.t. the relationship between
  - user actions and
  - system outcome

# Meaningful Play: Examples



## Elefunk: Building a bridge for elephants

- User builds bridge
- Elephant starts to walk
- Bridge
  - breaks
  - doesn't break

<http://youtu.be/q8C2o7jwqrl>



# Bridge Constructor ..



- Compare to Bridge Constructor
  - <https://www.youtube.com/watch?v=myaycrWRXjo>



# Meaningful Play: Examples



## World of Goo: Building with „goo“

- User builds structure
- Structure wobbles
- Type of wobble indicates instability
- Users can react



# Meaningful Play: Examples



## RPG - feeding the avatars

- Do I see if they are hungry?
- Do they just drop dead on starvation?

## Strategy - mini maps & events

- Do I see if I am attacked outside my map section on the mini map?

# Meaningful Play: Examples



## The Walking Dead (ttg)

- Dialogs have effects
- Effects are displayed

Trailer: <http://youtu.be/fhL776xz9YU>

Play?



# Meaningful Play



## Descriptive definition

*Meaningful play emerges from relationship between player action and system outcome. Meaning resides in the relation between action and outcome.*

# Meaningful Play



## Evaluative definition

*Meaningful play occurs when the relationships between actions and outcomes are **discernable** and **integrated** in the larger context of the game.*

# Meaningful Play



- Discernable relationships
  - perceive outcome of an action immediately
- Integrated relationships
  - outcome of an action is woven into the game system

# Meaningful Play



*Designing a successful game requires to understand the principle of meaningful play.*

# Design



*Design is the process by which a designer creates a context to be encountered by a participant, from which meaning emerges.*

# Design: Example



## World of Goo

- Player is in a world, in which
  - goo can be used to build structures
  - goo needs to „rescued“
  - environment & goo characteristics pose obstacles to construction



# Design: Semiotics



- Semiotics is the study of *meaning*
  - investigating how signs represent or denote
- Signs to designate objects & ideas
  - A sign represents something
  - Signs are interpreted
  - Meaning results when signs are interpreted
  - Context shapes interpretation

# Design



- Design creates meaning
  - expressed by signs
  - shaped through context (not the sign itself)
- Game designers create systems, which
  - are a context for signs
  - provide meaningful play

# System created by game design ...



- Stacking (Double Fine)
- See <http://youtu.be/S3l5Rhtamhs>

# System



*A system is a set of parts that interrelate to form a complex whole.*

# System



- **Objects**
  - elements, parts, variables of a system
- **Attributes**
  - properties of elements & system
- **Internal relationships**
  - relations among the objects
- **Environment**
  - context surrounding the system

# Systems



Games systems can be framed as

- Formal systems
  - mathematical, logical
- Experiential systems
  - based on interaction with the players
- Cultural systems
  - cultural references, interrelations

# Systems: Chess



- Formal system
  - Objects
    - pieces on the board
  - Attributes
    - rules for each object
  - Internal Relationships
    - spatial and strategic relationships
  - Environment
    - just the actual play for formal systems

# Systems: Chess



- Experiential system
  - Objects
    - two players (chess as interaction between players)
  - Attributes
    - pieces players control & state of the game
  - Internal relationships
    - interaction (strategic, emotional, social, psychological)
  - Environment
    - board, pieces, players, immediate environment

# Systems: Chess



- Cultural system
  - Objects
    - the game of chess itself
  - Attributes
    - designed elements of the game and when, how and why the game was made and used
  - Internal relationships
    - links between game and culture (e.g. black & white, king)
  - Environment
    - culture itself in which the game is played

# Closed vs. Open Systems



- Formal systems
  - closed
- Cultural systems
  - open
- Experiential systems
  - closed around players & game
  - open as influenced by the outside

# Interactivity



What is interactivity?

*... interactivity means the ability to intervene in a meaningful way with the representation itself, not to read it differently.*

src. A. Cameron, *Dissimulations: Illusions of Interactivity*, 1995,  
<http://mfj-online.org/journalPages/MFJ28/Dissimulations.html>

# Interactivity: Multivalent Model



- Cognitive Interactivity
  - interpretive participation
  - psychological, emotional and intellectual participation
- Functional interactivity
  - utilitarian participation
  - functional use like buttons, readability, response time

# Interactivity: Multivalent Model

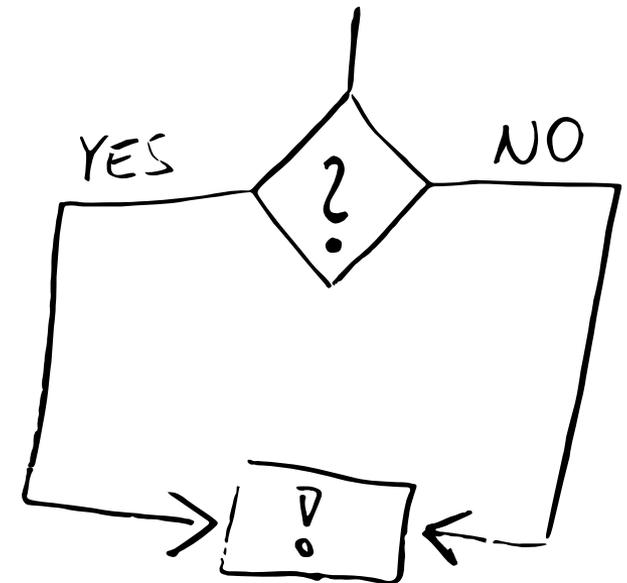


- **Explicit interactivity**
  - participation with designed choices and procedures
  - clicking links, moving objects with the gamepad, pressing button on the guitar controller
- **Beyond-the-object interactivity**
  - participation within the culture of the object
  - fan communities, interaction outside the system

# Interactivity



- Game design focuses on explicit interactivity
  - How to design meaningful choices?



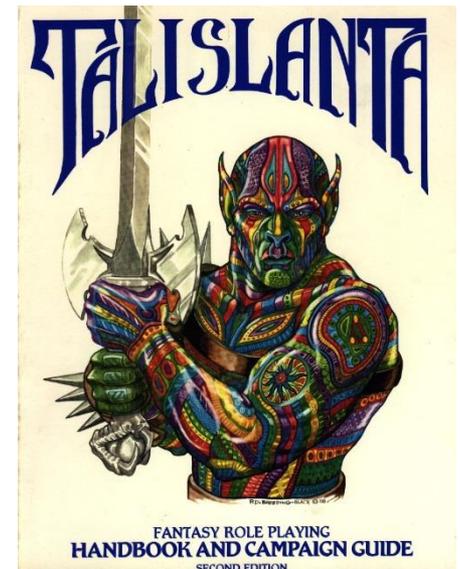
# Interactivity

## Meaningful Choices



### Role-Playing Game: Example I

- DM: You are at a fork
- P1: I'm heading left
- P2: I'm heading right
- DM: After a while of walking your paths join again.



# Interactivity

## Meaningful Choices



### Role-Playing Game: Example II

- DM: You stop at a door made of blinding light.
- P1: I put my dagger into the light
- DM: It turns to dust
- P1: I put my knife into the light
- DM: It turns to dust
- P1: I put my Mithril sword into the light
- DM: It turns to dust too
- P1: Why??? It's made of Mithril!



# Interactivity: Choices



- Micro choices
  - moment-to-moment interactivity
- Macro choices
  - long term progress
- Consider example “Tekken”
  - Choice of character is macro choice
  - Choice of next combat move is micro choice

# Designing Interactivity



- Basic unit of designed interaction
  - action > outcome unit
- 5 stages of action > outcome events
  - (1) What happened before the player was given the choice?
  - (2) How is the possibility of choice conveyed to the player?
  - (3) How did the player make the choice?
  - (4) What is the result? How will it affect future choices?
  - (5) How is the result of the choice conveyed to the player?

# Designing Interactivity

## Examples



- Feeling as if decisions are arbitrary
  - Game suffers in stage 4?
  - Is there an effect in the system?
- Not knowing what to do next
  - Game suffers in stage 2?
  - Are choices presented to the player?

# Designing Interactivity

## Examples



- **Loosing a game without knowing why**
  - Game suffers in stage 5?
  - Has the result of choices been presented to the player?
  - Example: environmental influence in an RPG
- **Not knowing if an action has an outcome**
  - Game suffers in stages 3 and 4?
  - Either action was not taken or it doesn't affect the system?
  - Example: motion game

# Storytelling



- Basic outline of a good story
  - Create a hero/ine
  - Create a goal
  - Model the steps between start and end
- Example: Super Mario
  - Hero: Mario
  - Goal: Rescue princess
  - Steps: Level your way through challenges
  - <http://youtu.be/4TdczoetXk4>

# Bioshock Infinite



# Cyberpunk 2077



- Auf Basis „Neuromancer“ (Gibson) & Cyberpunk RPG
- <http://youtu.be/P99qJGrPNLs>

# Metro Last Light



- Basierend auf Roman von Dmitry Glukhovsky, „Metro 2033“
- Live Action Trailer:  
<http://youtu.be/mON5WmA5REk>
- Gameplay Trailer:  
<http://youtu.be/Zinq8ZcCksg>

# Storytelling in games



- **Example: Fallout 3**
  - Hero: Vault 101 dweller that escaped
  - Goal: Find father
  - Steps: Quest to get information on whereabouts of father
- **Discuss: Unreal Tournament vs. Heavy Rain**

# Storytelling as USP



- **Telltale Games**

- Walking Dead, Tales from the Borderlands, Wolf Among Us, Game of Thrones
- Buy IP and create short episodes
- Focus on storytelling
- Engine is developed “along the way”



*Src. Connors, Dan (Telltale Games); “What Television Can Learn from Episodic Gaming” GDC Europe 2009*

# Example: Pure



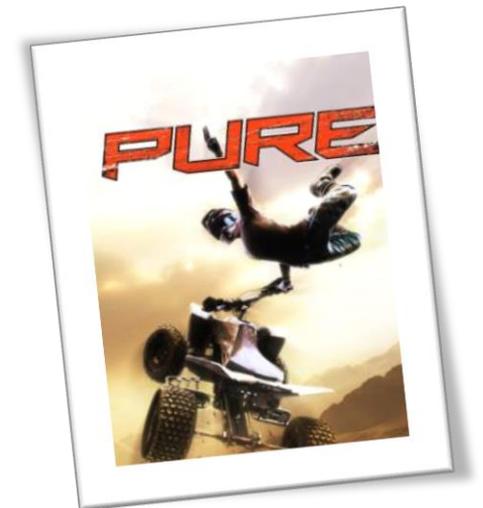
- Quad racing game
- Mainly player vs. AI
- Idea: Don't let player race alone



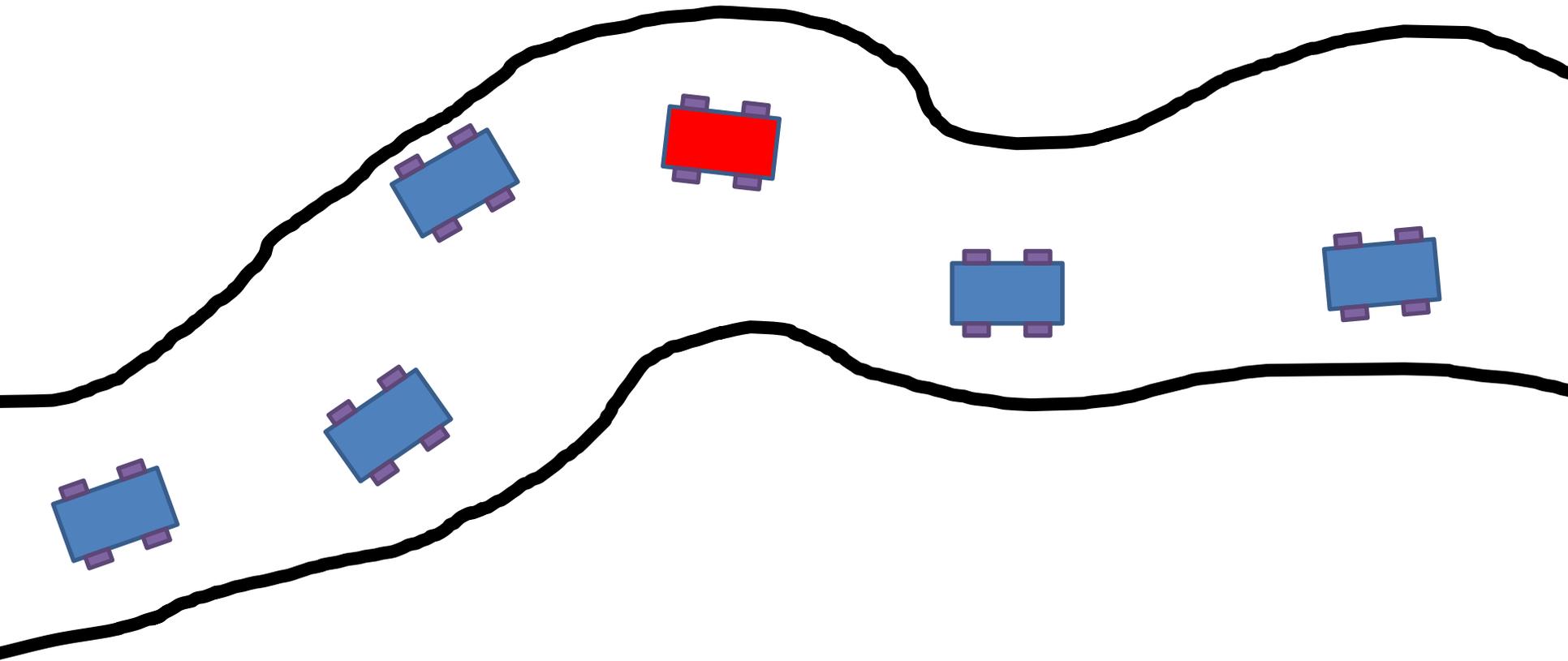
# Pure: Storytelling with Rubberband AI



- Pull a rubber band over player and AI quads
- Pros:
  - Neither of them can get “away”
  - Player does not feel alone
  - Easy to implement
- Cons:
  - Requires cheating
  - Typical, linear experience



# Pure: Storytelling with Rubberband AI



# Pure: Storytelling with Rubber Band AI



- Race script: storyboard for races
  - Set of rules instead of static definition
  - Done by designers
  - Fixes “loneliness” and “cheating” experience



# Pure: Storytelling with Rubber Band AI



- Example: the ideal case
- 3 groups: head, middle, back
  - Head and middle group leave the player behind at the start
  - Player goes progressing and jumping from one group to another
  - Some AI riders will jump with the player
  - At the middle of the last lap the player is in head position and the AI will be more forgiving from now on with his errors

# Example Game Design Processes



## Game Design of Flower

- Show video ...



# Flower (1)



- Goal: Emotional experience
  - More than aggression, hate, anger & fear
  - “Feel good experience”
  - No highscores etc.
- Game design
  - Not clear from the beginning
  - Easy to understand
  - Developed over several prototype-test iterations



# Flower Prototypes



Main game objects: flowers

Series of prototypes

- Control sun to let flowers grow
- Sleepwalkers perspective (no flowers)
  - Sleepy view, blurred environment
- Golf prototype
  - control seed, plant in hole
  - Final game: game control



# Flower Prototypes ctd.



- Rollercoaster prototype
  - Tunnel experience, sit & watch
  - Contribution to final game: wind
- Survival prototype: flowers as “fuel”
  - Contribution to final game: hostile environment
- Orb prototype
  - Flowers fill colored orbs, unlock environments
  - Contribution to final game: hideouts

# Flower



- Prototypes on different platforms
  - Java
  - Microsoft XNA
  - Playstation 3
- Small team
  - 6 people core
  - 3 people joined later



# Designing a horror game



## What is horror?

- an intense feeling of fear, shock or disgust
- a literary or film genre concerned with arousing such feelings



# What is horror?



- A very broad category of fiction
- Any work that produces feelings like fear, shock, dread, or disgust
- Genre is unique as it is described by the feelings that emerge by consuming the work



# Designing Horror Games



- Manipulate player behavior
- Conduct emotional response
- It's about extreme emotions

# Good Horror Games



- ... immerse us in an atmosphere of dread
- ... explore our fears
- ... violate our comfort zones
- ... let us experience the thrill of being preyed upon

# Action vs. Survival



## Action Horror

- Faster pace (fight)
- Action
- Combat
- Action Hero Protagonist
- Empowered Player

## Survival Horror

- Slower Pace (flight)
- Puzzles
- Exploration
- Survivor Protagonist
- Disempowered Player

# Horror Game Examples



- Heavy Rain
- Alan Wake
- Resident Evil
- Left 4 Dead
- Dead Space

# Survival Horror



- Survival horror is full of contradictions
- Video games typically provide wish fulfillment, but horror games provide “nightmare fulfillment”
- Video games are empowering ...
- ... but horror games are disempowering

# Survival Horror



Early survival horror games were broken action games with ...

- poor camera
- poor controls
- poor interface

[https://www.youtube.com/watch?v=xI\\_5gohqtnQ](https://www.youtube.com/watch?v=xI_5gohqtnQ)

# Action Games for Horror?



- Action games have evolved
  - Interface & controls improved
  - Clever inventory systems
  - Streamlined HUDs
  - Intuitive camera
- Applied to horror games this again empowers players

# Clive Barker's “3 Degrees of Violation”



- 1<sup>st</sup> Degree: Infliction
- 2<sup>nd</sup> Degree: Infestation
- 3<sup>rd</sup> Degree: Possession

# Clive Barker's “3 Degrees of Violation”



## 1<sup>st</sup> Degree: Infliction

- Breaking of body surfaces
- Violation of human superiority
- Indignation of being preyed upon
- Death is the ultimate result

# Clive Barker's “3 Degrees of Violation”



## 2<sup>nd</sup> Degree: Infestation

- Colonization or transformation of tissues and membranes (“body horror”)
- Prolonged horror: impending death & doom
- Invasion of body; despoiling sacred temple
- Self-destruction - release - is still an option

# Clive Barker's “3 Degrees of Violation”



## 3<sup>rd</sup> Degree: Possession

- Hijacking of mind (not only body)
- Psychological horror
- Victim is conscious, but unable to affect release
- Death is not an assured release

# Trailer: Alan Wake



- <http://youtu.be/sSB4QcQMm6E>

# Trailer Fallout: New Vegas



- <https://youtu.be/e1emphGk1Z4>

# Game Mechanics of Fallout New Vegas



Lessons learned from Fallout: New Vegas

1. Mechanical Chaos Is Frustrating
2. What You Perceive Matters Most
3. Strategic Failures Feel Terrible



# Mechanical Chaos



## Randomized Accuracy



<https://youtu.be/PEwEjl4Khkk?list=PL2FC5211D39FB4EF7&t=976>

# Fallout NV: Casino Gambling



## Problems

- Player expectation of casino games
- Real casino games are house-biased
- Results can be avoided via reload
- Potential economy breaker
- Negative reaction to limits

## Solution

- Three low-impact casino games
- Luck stat only improves odds
- Anti-cheating measures on load
- Set and accept max winnings
- Reward hitting the limits

# What You Perceive Matters Most



**HIGHER NUMBER = BETTER THAN**



**DAM: 32**  
**DPS: 69**  
**Spread: 0.04**

**DAM: 11**  
**DPS: 121**  
**Spread: 2.2**



# 9mm SMG: Before & After



## Before

- Low DAM (11)
- High DPS (121)
- Terrible Spread (2.2)
- High Ammo Consumption (11/sec.)

## After

- Low-ish DAM (14)
- High DPS (154)
- Fair Spread (1.5)
- High Ammo Consumption (11/sec.)



# Strategic Failure Feels Terrible



- Fallout 3: Big guns skill
- Fallout NV: Re-Design



# Readings - Exercise



- Read postmortems
  - Goat Simulator Postmortem,
  - Shadow of Mordor Postmortem,
  - Doom's horseshoe level design