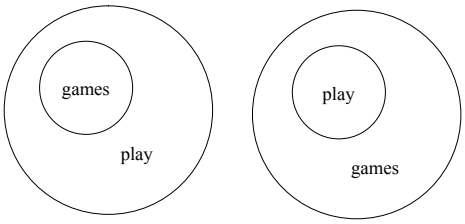
G54GAM - Games

- Understanding Interaction

Last Week

- Defining Games and Play
- Properties of Computer Games
- Rules and the Core Mechanic
- Genres

Play and Games



The Core Mechanic

- How do we define the “experience”?
- The essential play activity players perform again and again
  - A single activity
    - Bash the fire button, use the joystick
  - A compound activity
    - Move, aim, fire, manage resources, strategize
- The experiential building block of player interaction

Game Genres

- Action
  - Shooters
  - Platformers
  - Fighting
- Adventure
- Action-Adventure
- Strategy
  - Real Time Strategy
  - Turn Based Strategy
- Role Playing Games
- Simulation
- Others

This Week

- Coursework ☹
- Games as Systems
- Meaningful Play, Interaction and Choice
- Mechanics, Dynamics and Aesthetics

Coursework 1

- Pick a game, play it and critically document the game design
  - Critical does not mean bad
  - Critical does not mean subjective
  - This is not a game review
- Think about
  - The genre and core mechanic
  - The systems and rules
  - The interactivity and meaningful choice
  - The conflict and challenges
  - The narrative, balance and progression
- Document and critically discuss the design of an existing game in 2000 - 2500 words
- Due Friday 16/03/2012

Understanding Interaction

Games as Systems

- Games are **systemic**
  - We can understand them as systems
  - A group of interacting elements forming a complex whole
  - A condition of harmonious, orderly interaction
- The game of chess
  - A strategic mathematical system
  - A system of social interaction between two players
  - A system that abstractly simulates war

Systems

- Objects
  - The parts, elements or variables within the system
  - Physical or abstract
- Attributes
  - The qualities or properties of the system and its objects
- Internal Relationships
  - Relationships between objects
- Environments
  - Systems are affected by their surroundings

Games as Systems

- Formal
  - A formal system of rules
- Experiential
  - A system of interaction between the players and the game
- Cultural
  - How the game fits into culture at large
- Systems can be open or closed

Pac-Man as a Formal System

- …as a functional and formal system of rules
- Objects
  - Pac-Man
  - Ghosts
  - Maze
  - Pills
- Attributes
  - Where the objects start
  - Where and how the objects can move
- Internal Relationships
  - Positions of the objects within the maze
  - Pac-man is being chased by a ghost
- Environment
  - The play of the game
  - The context for the formal elements of the game

Pac-Man as an Experiential System

- …as a system of interaction between players and the game
- Objects
  - The player
  - The game
- Attributes
  - The Pac-Man that the player controls
  - The current state of the game
- Internal Relationships
  - The interaction between the player and the game
  - Strategic, social, psychological, emotional interactions
- Environment
  - Context of play – public, private, arcade, computer
  - Immediate environment of the player and the game
  - Player's preconceptions of Pac-Man

Pac-Man as a Cultural System

- …identifying cultural references, role in popular culture
- Objects
  - The game of Pac-Man
- Attributes
  - The designed elements of the game
  - How, when, why the game was made and used
- Internal Relationships
  - Links between Pac-Man and culture
  - One of the most famous games
- Environment
  - Extends beyond an individual instance, and the context of play
  - Culture in all forms
  - Popular culture, video game culture

Open or Closed System

- As a **formal** system of rules
  - Pac-man is a **closed** system
- As a **cultural** system
  - **Open** – Pac-man intersects with society, history
- As an **experiential** system
  - **Closed** – for players, the only relevant events are internal to the game
  - **Open** – players bring emotional and social baggage to their experiences
    - Distractions of the environment, reputation to be lost

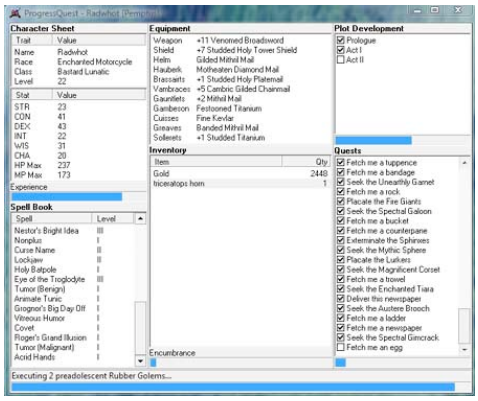
Game Design

- Game Design is a second-order design problem
- Designer creates…
  - The formal system
  - The rules
  - Explicit interactions with the system
- The experiential and cultural systems are emergent from the formal system created by the designer
- The designer **indirectly** designs the player's experience by **directly** designing
  - The formal system
  - The rules
  - Explicit interactions with the system

Laurel (1993)

- *[They] identified action as the key ingredient and conceived Spacewar! as a game that could provide a good balance between thinking and doing for its players. They regarded the computer as a machine naturally suited for representing things that you could see, control, and play with. Its interesting potential lay not in its ability to perform calculations but in its capacity to represent action in which humans could participate.*

Interaction?



Defining Interaction

- Cognitive interactivity
  - Interpretive participation
  - Psychological, emotional, intellectual interaction between player and system
  - Using your imagination while playing a game
- Functional interactivity
  - Utilitarian participation
  - Structural interactions
  - What does the interface look like, is it well designed?
  - Does the game feel responsive

Defining Interaction

- Explicit interactivity
  - Participation with designed choices and procedures
  - Using the joystick to move Pac-Man
  - Choices, random events, rules and procedures
- Cultural, beyond-the-object interactivity
  - Participation within the culture of the object
  - Joining the Pac-Man fan club?

Interaction and Game Design

- Game design is the process of creating an experience with **meaningful play**
- By focusing on defining **explicit** and **functional** interaction
- If we're lucky this also leads to **cognitive** and **cultural** interactivity

Meaningful Play

- Meaningful play emerges from the relationship between player action and system outcome; it is the process by which a player takes action within the designed system of a game and the system responds to the action. The meaning of the action in a game resides in the relationship between action and outcome.

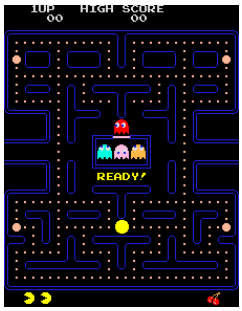
Meaningful Play

- Provides internal structure
  - Interaction between the player and elements of a system are made meaningful by rules which describe their relationship
- Includes a context
  - Assigns meaning to actions that are taken
- Discernable
  - The player can perceive the immediate outcome of an action
- Integrated
  - The outcome of an action is woven into the game system as a whole, including the future
- Descriptive
  - Emerges from the relationship between player actions and system outcomes
- Evaluative
  - Relationships between actions and outcomes are discernable and integrated into the large game context

Meaningful Play and Choice

- Meaningful play has to incorporate explicit interactivity and meaningful choice
  - Otherwise the player must invent their own goals
- Micro-choices
  - Moment to moment interactivity
- Macro-choices
  - Concern the long-term progress of the game experience
  - Represent the way micro-choices join together to form a larger trajectory of experience

Pac-Man (1980)



Micro-Choice - Atomic

- Controlling Pac-Man
  - Press left, Pac-Man moves left
  - Press right, Pac-Man moves right
- Discernable
  - Move the joystick, Pac-Man moves
- Descriptive
  - The player can immediately see Pac-Man move and moderate their input

Macro-Choice - Gross

- Collecting all the pills in Pac-Man
  - Choosing a strategy
  - Collect all the pills in the most efficient manner
  - Avoiding being caught by the ghosts
  - Planning a route to collect power-ups to catch the ghosts
  - Deciding **whether to play in the first place**
- Integrated
  - The different choices determine whether the player wins or loses the game as a whole
- Evaluative
  - We can evaluate whether our choice was good (the player either wins or loses)

Designed Interaction

- Two interactions
  - Rolling dice in Monopoly
  - Dropping an apple on the floor
- Rolling of the dice is meaningful
  - The dice are part of a system
  - Interaction between player and the dice made meaningful by the rules of the game
  - Situated within a specific context

Anatomy of Choice

- What happened before the player was given the choice?
- How is the possibility of choice conveyed to the player?
- How did the player make the choice?
- What is the result of the choice? How will it affect future choices?
- How is the result of the choice conveyed to the player?

Anatomy of Choice

- What happened before the player was given the choice?

- Refers to the internal state of the game
- Where are the ghosts and where is Pac-Man?
- What is the player's health?

Anatomy of Choice

- How is the possibility of choice conveyed to the player?

- Conveyed as an external event
- The screen displays the state of the game
  - where the ghosts are
- The maze implies where Pac-Man can move
- The joystick implies possible options
  - knowledge of how Pac-Man moves

Anatomy of Choice

- How did the player make the choice?

- The player weighs up their options, makes a decision
- The player moves the joystick

Anatomy of Choice

- What is the result of the choice? How will it affect future choices?

- The game updates its internal state
- Did we hit a ghost?
- Did we eat a pill?

Anatomy of Choice

- How is the result of the choice conveyed to the player?

- The result of the choice is represented to the player via screen graphics and audio
- Pac-Man moves
- We see Pac-Man eating a pill
- We see the ghosts killing Pac-Man

- …leads back to step 1
- Game interaction = state machine

Characterising Choice

- Hollow
- Obvious
- Uninformed
- Informed
- Dramatic
- Weighted
- Immediate
- Long-term
- Orthogonal

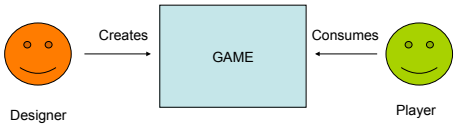
Failure States

- Actions seem arbitrary
  - Player actions should have meaningful outcomes in the internal game state
  - Everything should be there for a reason
- Not knowing what to do next
  - Clearly represent choices to the player
- Punishment without knowing why
  - The state resulting from a choice is not represented clearly enough to the player
- Not knowing whether an action had an outcome
  - Action and outcome should be explicit
  - Movement should be responsive

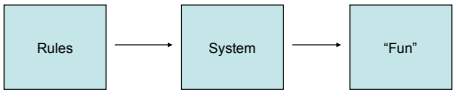
Game Experience and Choice

- Low-level design principals
  - Immediate feedback
  - Moment-by-moment systems
  - Keep the player in the game
- High-level design principals
  - Progression and Motivation
  - Pacing and difficulty
- Genre-specific design principals
  - Puzzle design
  - Resource management
  - Economic systems

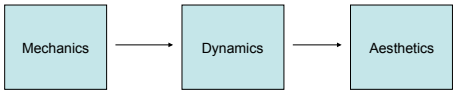
Production and Consumption



Components



Design Counterparts



LeBlanc (2004)

Design Counterparts

- Mechanics
  - Components of the game
  - Data representation and algorithms
- Dynamics
  - Run-time behaviour of mechanics
  - Acting on inputs and outputs
- Aesthetics
  - Desirable emotional responses invoked in the player

Aesthetic Models

- What makes a game fun?
- Sensation
- Fantasy
- Narrative
- Challenge
- Fellowship
- Discovery
- Expression
- Submission

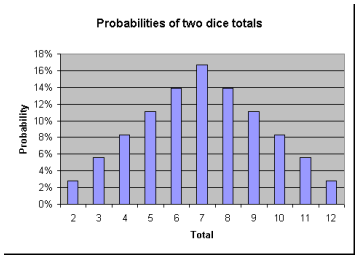
Aesthetic Models

- Quake
  - Challenge
  - Sensation
  - Competition
  - Fantasy
- Final Fantasy
  - Fantasy
  - Narrative
  - Expression
  - Discovery

Dynamic Models

- Dynamics work to create Aesthetic (FUN) Experiences
- Challenge
  - Created by time pressure, adversarial play
  - Emotional investment in defeating opponent
  - Obstacles and Increasing difficulty
- Dramatic Tension
  - Encourage a rising tension followed by release
- Fellowship
  - Sharing information between players
  - Winning conditions that are difficult to achieve alone
- Expression
  - Systems for purchasing, building, earning game items

Predict and Describe Dynamics



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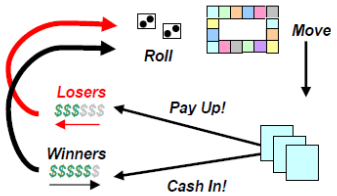

Mechanics

- Actions, behaviours, choices, control mechanisms
- Mechanics support game play dynamics
- Adjusting mechanics help to fine-tune the overall dynamics of the game

Tuning Mechanics

- Discovery
- Exploration of the level
- Change mechanics to better support exploration
- Unlockable regions
- Hidden secrets
- Same terrain, different obstacles

Tuning Mechanics

- Challenge
- Is it too hard or too easy?
- Is it challenging or boring?
- Dynamically balanced, feedback loops
- Chance of a power-up being collected

Extra-curricular reading

- **Pilgrim in the Microworld – David Sudnow (1983)**
- **"*If only I could feel the impact of the ball on the paddle, that would certainly help, would give me a tactile marker, stamping the gesture's places into a palpable little signature so I'd feel each destination being achieved and not just witness the consequences of a correct shot.*"**