

## G54GAM - Games

- Understanding challenge
  - Formal and Dramatic Elements of Game Play

## 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

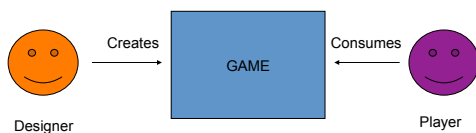
## Meaningful Play and Choice

- 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

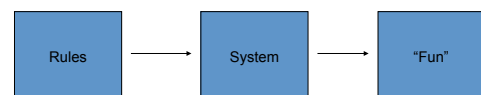
## This Week

- Mechanics, Dynamics, Aesthetics
- Formal Elements
- Dramatic Elements
- Challenge

## Production and Consumption



## Components



## Design Counterparts



## 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

## Game Play

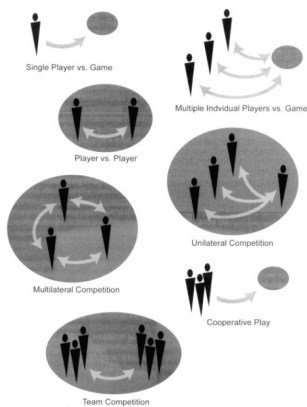
- What is Game Play?
- ...the actions, interactions and choices the player makes throughout the game
  - Actions in the game world
  - Interactions with the interface
  - Interactions with game characters
  - Choices the player makes in the game

## Formal Elements of Game Play

- Game Design Workshop
  - Tracy Fullerton, 2008
- Players
- Goals and Objectives
- Procedures
- Rules
- Resources
- Conflict
- Boundaries
- Outcomes

## Players

- Number of players
  - Single or multiple
  - Set or variable
- Roles of players
  - Uniform or different
  - Balanced
- Player interaction patterns
  - Single player versus game
  - Multiple individual players versus game
  - Player versus player
  - Unilateral competition
  - Multilateral competition
  - Cooperative play
  - Team competition



## Goals and Objectives

- What is the point of playing?
- Define what players are trying to accomplish within the rules of the game
  - **Challenging** but achievable
  - Can set tone of the game
  - Different objectives for different players
  - Players choose from several objectives
  - Partial objectives to help players achieve main objective
- What are some common objectives?

## Goals and Objectives

- Capture
  - Take or destroy something of opponent's without being captured or killed
- Chase
  - Catch or elude opponent
- Race
  - Reach a goal before other players
- Alignment
  - Arrange game pieces
- Rescue or escape
  - Get defined units to safety

## Goals and Objectives

- Construction
  - Build, maintain and manage objects
- Exploration
  - Explore game areas
- Solution
  - Solve a puzzle before the competition
- Outwit
  - Gain and use knowledge to defeat players

## Procedures

- Methods of play and actions players are allowed to take to achieve the game objectives
- Formalise interaction
  - Guide player behaviour
  - Described by the rules, put into action by the players
- System procedures (behind the scenes)
- Left arrow
  - Move to the left

## Procedures

- The player controls the space-ship
- The player makes the space-ship fire bullets
- The player's bullets hit and destroy enemies
- The game makes enemies move in a certain way
- The game makes enemies attack in waves
- The game runs the game (!)

## Rules

- Define game objects and allowable actions by the player
- Restrict and limit the scope of **Actions**
- Determine the effect of **Actions**
- Keep the game balanced

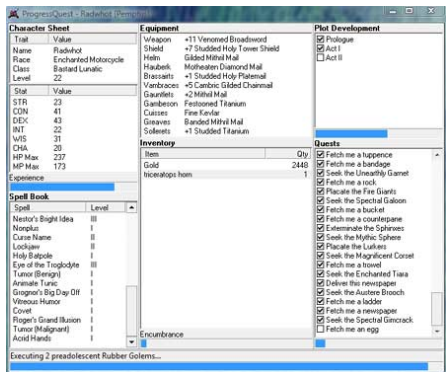
## Rules

- The space-ship moves at a certain speed
- The space-ship is limited to moving in a certain Cartesian space
- Bullets can be only be fired at a certain rate
- Enemies are destroyed once hit a certain number of times
- The player only has a limited number of lives

## Rules

- Too many rules
  - Make the game unplayable
- Too few rules
  - Make the game so simple as to be unchallenging
- Poorly communicated rules
  - Confuse or alienate players
  - Players feel cheated by the consequences





## Resources

- Artificial game “currency” creates dynamic play
- Lives
  - Only have 3 lives
- Health, currency, weapons and power-ups, armour, potions
- Terrain
  - Must capture and hold terrain in strategy game
- Time
  - Must complete the level within a certain time
- Must have utility and balanced scarcity, otherwise they are worthless
- Need to determine how and when to control player access to resources

## Conflict

- Conflict emerges from players trying to accomplish the goals of the game within the scope of its rules
  - Rules and procedures do not allow players to accomplish goals directly - offer inefficient means to accomplish objectives
  - Force players to employ a range of skills
- Obstacles - Physical and mental challenges
- Opponents - Primary feature in multiplayer games
- Dilemmas - Choices player has to make

## Conflict

- Tiger Woods Golf
  - Get the ball from the tee to the hole in as few strokes as possible
  - Avoid obstacles using skill – trees, water etc
- Quake
  - Opponents provide primary conflict
  - Stay alive while other players try to kill you
- Poker
  - Stay in or fold?
  - How good is my ability to bluff?
- Armed Police Batrider
  - Conserve or use my big power-up weapon?
  - Conflict based on resources





## Boundaries

- Boundaries separate game from non-game
- The barrier between the real world and the game
- Physical or conceptual
  - The edge of the arena, football pitch
  - Social agreement to play or not play
  - Players and spectators
- Huizinga's magic circle
  - To play a game means entering into a magic circle, or create one as a game begins
- Pervasive games
  - Push the boundaries of the magic circle

## Outcomes

- Zero sum games
  - If one player wins, another loses
- Non-zero sum games
  - Everybody wins together, especially if we cooperate
- Completing the game
- Scoring a high number of points before eventually losing
  - Pinball
  - Rankings, score-boards
- Less tangible rewards
  - Respect of peers?

## Dramatic Elements of Game Play

- Formal elements work together to create a recognisable game
- Dramatic elements
  - Engage players emotionally with the game experience
  - Invest players in the game's outcome

## Dramatic Elements of Game Play

- Challenge
  - What keeps a player keep playing
  - Learning new skills, inability to do something
  - Constant reward
  - Control over own destiny
- Play
  - The experience of the game is an end in itself
  - Exploration, competing, being creative
- Premise
  - Why you are playing
- Narrative
  - Character development
  - The unfolding storyline

Think of a game that you found  
challenging

## Challenges (Ernest Adams)

- Pure Challenges
  - Abstract game play elements
- Applied Challenges
  - Combining one or more pure challenges in a given situation
- A good game presents a range of challenges
  - Different challenges appeal to different players
    - Best time
    - Found everything
    - Highest score
- Genres suggest certain challenges, but not set in stone

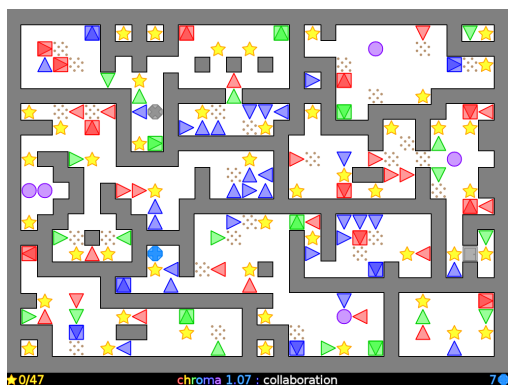


## Challenges

- Explicit Challenge
  - Specifically designed by the game designer
  - Exact timing required to dodge the swinging pendulum
- Implicit Challenge
  - Emergent feature of the game design
  - Not specifically designed
  - Figure out the most efficient way to spend money in an RPG/RTS

## Logic and Inference Challenges

- Require the player to assimilate information, use that information to decide best course of action
- Perfect information
  - The player knows the complete state of play at all times
  - Eg can see the whole chess board
  - Possible to produce a perfect strategy
- Imperfect information
  - Logic is not sufficient
  - Infer or guess based on extrapolation of existing facts



### Lateral-Thinking Challenges

- Draw on previous experience and knowledge and combine them in a new and unexpected way
- Intrinsic Knowledge
  - Knowledge is gained from the game world
- Extrinsic Knowledge
  - Knowledge gained outside the game world
  - Drawing on real life
  - Eg player knows that wood floats, water puts out fire



### Memory, Intelligence and Knowledge Challenges

- Memory
  - Tax the player's memory of recent game events
  - Purely intrinsic, solely based on events in the context of the game
- Intelligence
  - Rely on how clever the player is
  - Given a sequence of shapes, predict the next shape in the sequence
- Knowledge
  - Intrinsic, much like lateral thinking/logic
  - Extrinsic, based on knowledge of the real-world eg Trivial Pursuit

### Pattern Recognition Challenges

- Solve a challenge by identifying and learning a repeating pattern
- Defeat the enemy
  - Learning its movement
  - Learning its pattern of firing bullets
- Explicitly designed by the designer
- Implicitly emerges as a design to the player

### Spatial Awareness Challenges

- Usually implicit
- Hybrid of a memory challenge and an inference challenge
- Make sense of a 2d representation of a 3d world
- Potentially aided by a map or overview display

### Coordination Challenges

- Test the player's ability to perform many simultaneous actions
- Time a jump over a chasm while avoiding enemies
- Running while jumping
- Learning sequences of moves to perform a special move or combo





### “Twitchers” - Reflex and Reaction-Time Challenges

- Test the timing abilities of the player
- Often combined with coordination challenges
- Usually important in action games
- The faster a player can move and the better their reaction time, the greater the advantage in the game



### Applied Challenges

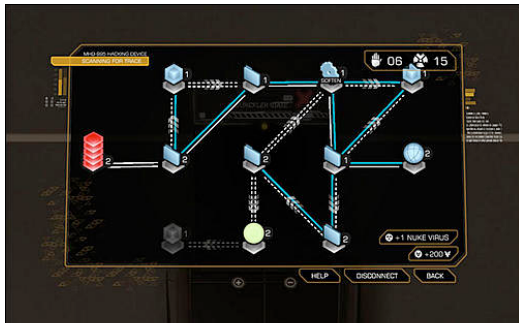
- The application of pure challenges to a particular game play situation or style
- A combination of one of more pure challenges
- Remember **goals** and **objectives**?

### Races

- Not necessarily a physical race
  - Construct something
  - Accumulate something
  - Put time pressure on the player
- Discourage careful strategic thought
- Encourage direct, brute-force solutions
- Require coordination
- Require good reflexes and reactions

### Puzzles

- Often presented as an obstacle
  - When solved opens another part of the game
- Player is presented with a series of objects
  - Related in ways that are not immediately obvious
  - Manipulate them into a certain configuration to solve the puzzle
  - Must understand the relationship between objects by trial and error and observation
- The correct solution should be clear at the outset
  - Player has to guess at what they are trying to achieve



## Exploration

- Moving into new areas and seeing new things
- Obstacles challenge the player to work for their freedom to explore
- Locked door
  - Find the key elsewhere and bring it here
  - Find a hidden control
  - Solve a puzzle
  - Defeat the doorkeeper
- Traps
  - Harm the player
  - A locked door with higher stakes
  - Fun is in outwitting traps
- Maze
  - Implemented as a puzzle
  - Must discover how the places are related by exploration
  - Deduce the organisation of the maze from clues found within it

## Conflict

- Challenges vary based on
  - The scale of the action
  - The speed (turn-based to real-time)
  - Complexity of the rules
- Strategy
  - Look at the state and devise tactics
  - Logistics of managing resources
- Action
  - Pattern recognition
  - Responding to unforeseen events and the actions of other players
- Survival
  - Staying alive
  - Defending other things that cannot defend themselves – flags, bases
- Avoiding Conflict
  - Stealth – Thief: The Dark Project



## Economies

- The movement of resources
- Simple Economy of an FPS
  - Ammunition is obtained by finding, consumed by firing weapons
  - Health is obtained by finding medikits, consumed by being hit
- Accumulate the most of something
  - Money - Monopoly
- Achieve an economic balance
  - Sim City

## Conceptual Challenges

- Require the player to understand something new
- Simulate processes that the player must come to understand
  - Relationship not immediately made explicit by the game
- Sim City
  - Direct relationship between efficient transport system and economic prosperity
- "Gaming the system"
  - Dominant strategies