

# COMP4002/G54GAM Games

Categorising Games

Dramatic Elements of Game Design

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

# Challenges (Ernest Adams)

- Pure Challenges
  - Abstract game play archetypes, not found in the wild but form the basis of most actual challenges
- Applied Challenges
  - Combining one or more pure challenges in a given situation
  - Often *hybridized* combinations of pure challenges
- Ideally a game (AAA) presents a range of challenges
  - Different challenges appeal to different players
    - Completed the game, best time, found everything, highest score
  - Increasingly present multiple challenges
    - Multiple challenges = multiple strategies to achieve same goal
      - Stealth vs action
- Genres suggest certain challenges, but not set in stone.

# Half-Life (1998)



# Half-Life (1998)



# Challenges

- Explicit Challenge
  - Specifically designed by the game designer
    - More immediate, intense, perceptible
  - Exact timing required to dodge the piranha plant
- Implicit Challenge
  - Emergent feature of the game design
  - Not specifically designed
  - Figure out the most efficient way to spend money in an RPG/RTS

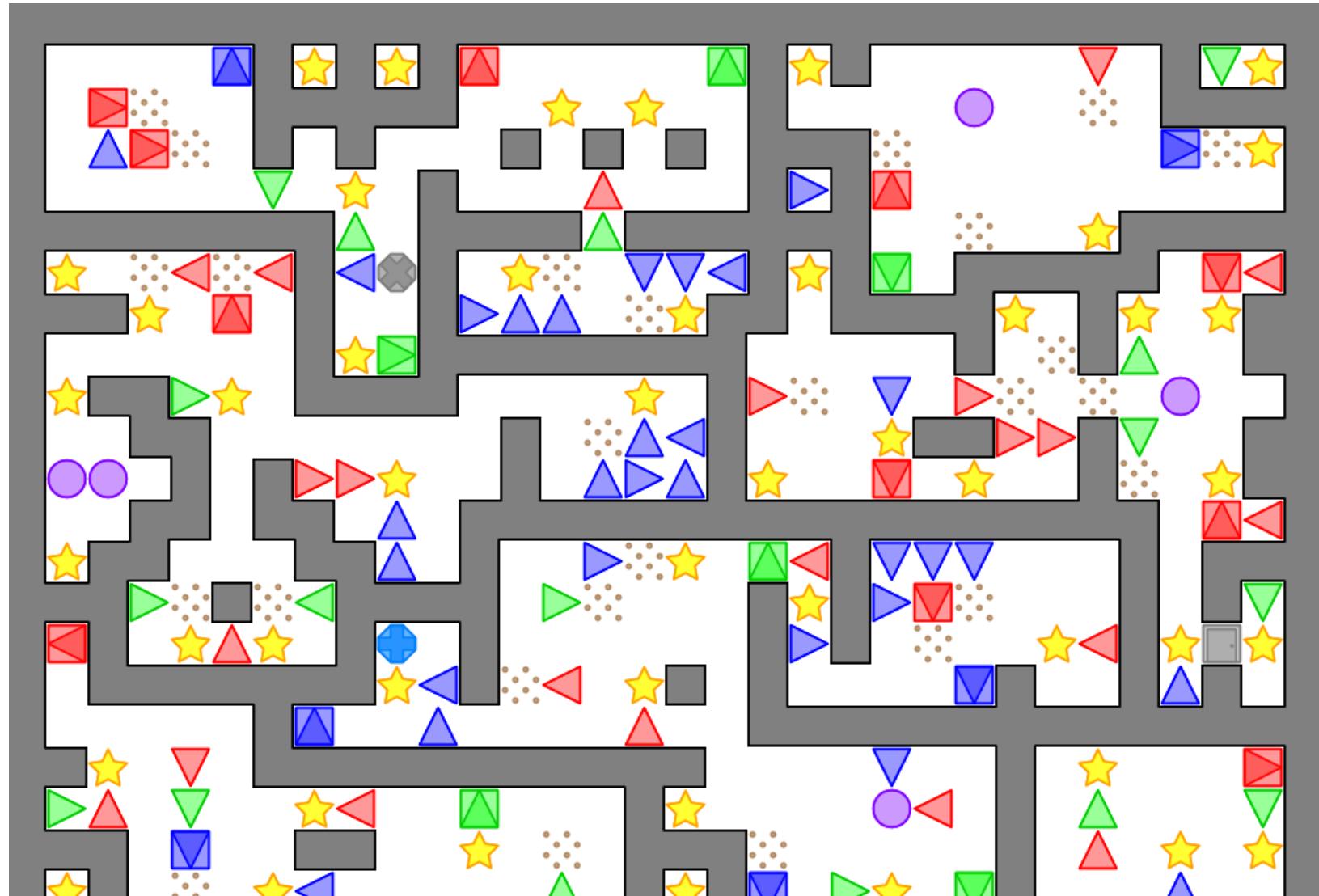


# Alien Isolation (2014)

- What are the challenges?
- [http://www.youtube.com/watch?feature=player\\_detailpage&v=AiB5pW3aggE#t=100](http://www.youtube.com/watch?feature=player_detailpage&v=AiB5pW3aggE#t=100)

# 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
  - E.g. 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
    - Force the player to hypothesize about the game world
    - A compelling mystery story or narrative
  - “Fog of war”



★ 0/47

chroma 1.07 : collaboration

7



# Lateral-Thinking Challenges

- Draw on previous experience and knowledge and combining 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
    - E.g. the player knows that wood floats, water puts out fire



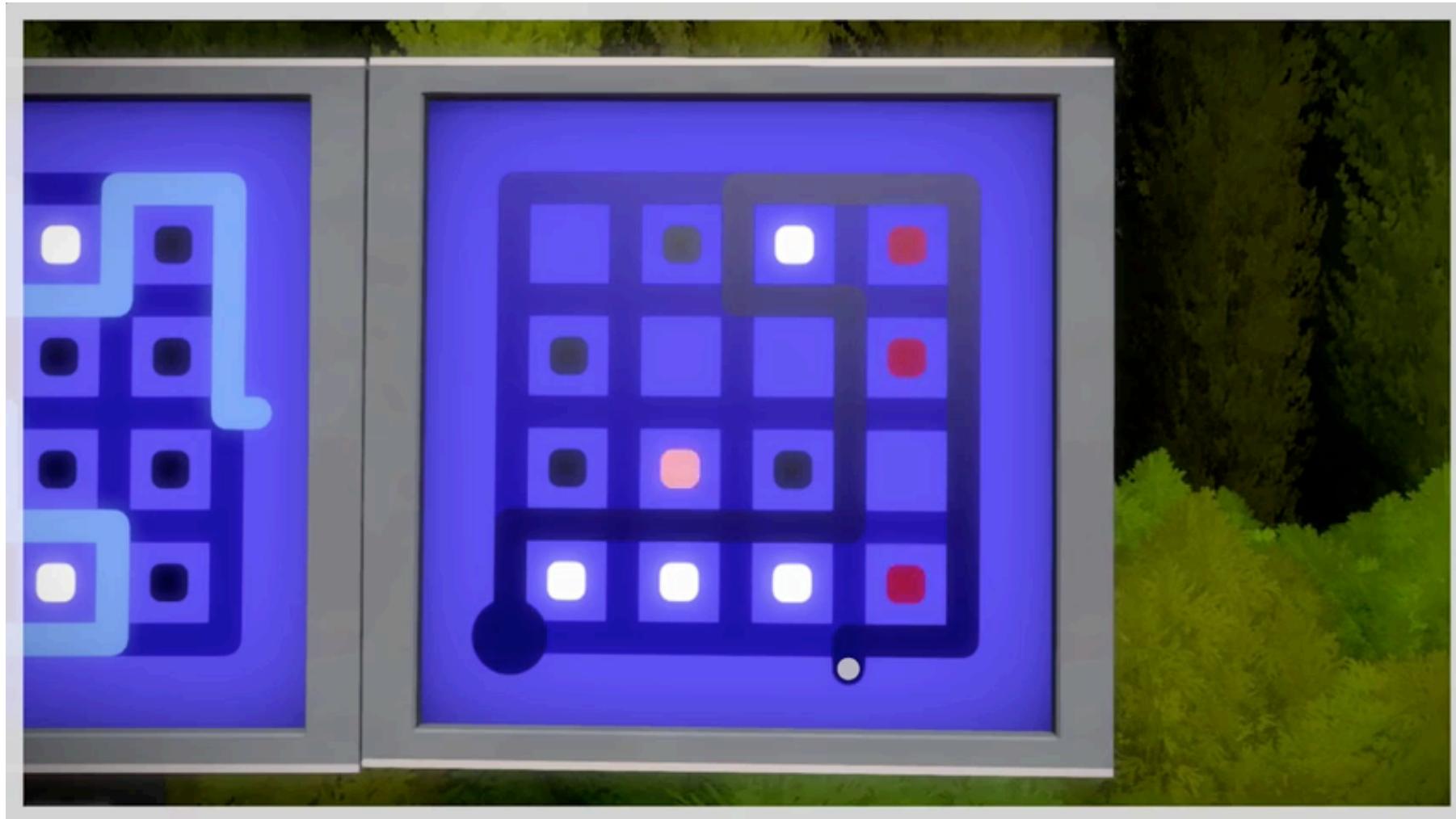
# Half-Life (1998)



# 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
    - C.f. IQ tests, but rarely seen in their pure form in games
- Knowledge
  - Intrinsic, much like lateral thinking/logic
  - Extrinsic, based on knowledge of the real-world eg Trivial Pursuit

# The Witness (2016)



# Pattern Recognition Challenges

- Solve a challenge by identifying and learning a repeating pattern
  - Failure might be expected
    - Learn the sequence by trial and (repeated) error
- 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

# Trap Adventure 2 (2017)



# Dark Souls (2011)



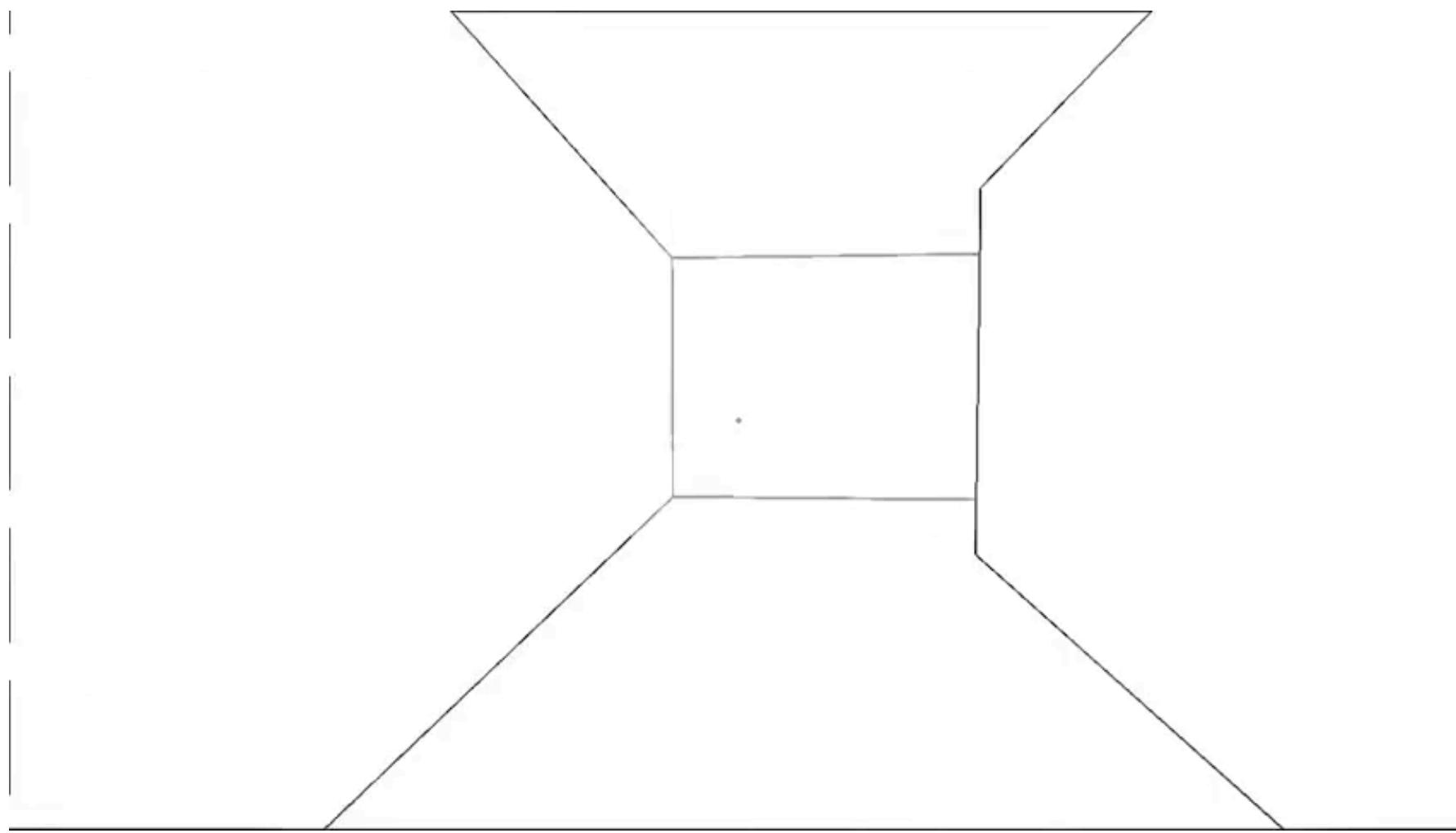
# Ikaruga (2001)



# Spatial Awareness Challenges

- Usually implicit
  - Necessarily need to understand the space to be able to explore, navigate
- Hybrid of a memory challenge and an inference challenge
  - The player is challenged to make sense of a 2d representation of a 3d world
  - Understand the situated role of the player's avatar
  - Immediate or long-term
    - Where am I going next, where have I just been
    - Learning the map
      - This is where important objects are
- Potentially aided by a map or overview display

# Antichamber (2013)



# Quake Live (2010)



# Coordination Challenges

- Test the player's ability to perform many simultaneous actions
  - Moving while aiming
- Coordinating inputs with onscreen action
  - Time a jump over a chasm while avoiding enemies
  - Steering
  - Not unrelated to pattern recognition challenges
- Learning sequences of controller inputs
  - Complex sequences inputs to trigger a *special move* as different from basic procedures
  - Trick jumping, strafe jumping, "surfing"



# “Twitchers” - Reflex and Reaction-Time Challenges

- Test the timing abilities of the player
  - Almost always combined with coordination challenges
- Usually important in action games
  - The speed at which the controls are operated maps directly to the speed at which the avatar reacts
- The faster a player can move and the better their reaction time, the greater the advantage in the game
  - “Gaming mouse”

# Quake Live (2010)



# Moral Challenges, Physical Challenges

- Moral Challenges
  - Draw upon players' real-world experiences to provide gameplay value, presenting some kind of dilemma
    - Universal, cultural, personal contexts
  - Explicit or implicit
    - May have significant gameplay implications
      - Multiple endings
      - ...or non
- Physical Challenges
  - Very uncommon outside of sports, dancing, rhythm
    - Dance Dance Revolution, Wii Sports
    - Implicit in extreme implementations of coordination, reflex challenges

# Spec Ops: The Line (2012)



# The Sims 4 (2014)



# Black and White 2 (2005)



# Applied Challenges

- The application of pure challenges to a particular game play situation or style
  - A combination of one or 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
  - Requires **coordination**
  - Requires **good reflexes and reactions**
  - “If the player has only 15 seconds to get through a host of enemies and disarm a bomb, he's not going to pick them off one by one with sniping shots; he's going to mow them down and charge through the gap, even if it means taking a lot of damage.”
- How might you add a race challenge to lab exercise 2?
  - (Objectives)

# Puzzles

- Often presented as an obstacle
  - A mental challenge
  - 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
  - Not the *answer*
  - Player has to guess at what they are trying to achieve
- Race + Puzzle = Intelligence challenge against the clock
  - Problematic to consider as inclusive?

# Deus Ex: Human Revolution (2011)



# Gunpoint (2013)



# Exploration

- Moving into new areas and seeing new things
  - Cannot be free from *challenge* (sightseeing, Dear Esther)
- Obstacles challenge the player to work for their freedom to explore
  - Barriers to exploration
  - Enable structured exploration to prevent the player exhausting *things to be seen* too quickly
- Locked door obstacle
  - Not necessarily a door
    - Any device that prevents the player from going on until he has done something to unlock it
  - Find the key elsewhere and bring it here
  - Find a hidden control
  - Solve a puzzle
  - Defeat the doorkeeper

# Exploration

- Traps
  - A locked door with higher stakes
  - Harm the player
    - Causes death or damage
    - Discourages the player from coming that way or using that move again
  - Some fire off once and then are harmless.
  - Others fire but require a certain recycle time before they can fire again.
  - Still others respond to particular conditions but not to others, like a metal detector at an airport.
  - Fun is in outwitting traps
    - pleasurable feeling of having outfoxed you, the designer, even as you were trying to outfox them
- Maze
  - Implemented as a puzzle
  - Must discover how the places are related by exploration
    - Learn the space
  - Deduce the organisation of the maze from clues found within it
    - Always turn right
  - Illogical mazes (antichamber)
    - teleporters

# Conflict

- Arises from the *outcome*
  - Attempting to win, attempting to beat other players
  - Challenges vary based on scale, speed, complexity
- Strategy and tactics
  - Examine the state and devise tactics
  - Logistics of managing resources
  - Putting the plan into execution
- Action
  - Personal conflict with an opponent
    - Immediate, visceral, fast
    - How might this be scaffolded?
  - Responding to unforeseen events and the actions of other players
- Survival
  - Staying alive, sacrificing units
  - Defending other things that cannot defend themselves – flags, bases, escorting NPCs
- Avoiding Conflict
  - Stealth – Thief: The Dark Project

# Wolfenstein: Enemy Territory (2003)



# Thief: The Dark Project (1998)



# Economies

- The movement of resources
  - Arises from the formal resource element
    - Which pure challenges?
- 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
  - Arising from intrinsic knowledge challenges
  - Her Story
    - Examine the evidence and deduce who committed the crime
- 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
    - Failure to deduce this will lead to difficult for the player
- “Gaming the system”
  - Dominant strategies and cheating

# Her Story (2015)



# Counter Strike

- <http://www.youtube.com/watch?v=-kkEj4rl2t8>
- Are first person shooters sufficiently *challenging*?
  - “Depth” of challenge

# The “Work” of Counter Strike

- Spatial awareness, coordination, memory, reflex and reaction times, conflict
- Moving competently
  - Mouse and keyboard
    - Gross movements, precise aiming
  - Efficiently traversing the terrain
  - Glancing
  - Ducking
  - Strafing

# The “Work” of Counter Strike

- Collaboration
  - Identifying the team
    - “At a glance appearance”
      - They don’t look like a counter-terrorist texture
    - Orientation towards the terrain
      - Aiming towards where the enemy is expected to appear
    - They don’t shoot the player
  - Maintain distance
    - Prevent friendly fire
    - Awareness of position via glancing
  - State actions / intentions
- Terrain
  - Map is known / must be learned
    - History of play gives expectation as to where to throw grenade
    - (Expectation can be used against you)

# Alien Isolation

- <https://www.youtube.com/watch?v=AiB5pW3aggE#t=654>

# Uncertainty and Risk

- Risk as a challenge
  - The outcome of an action is uncertain
    - Perhaps the action has random results
    - May depend upon an opponent's actions
      - Need to know what opponent will do
- Two primary means of introducing risk
  - Chance and **randomness**
  - **Imperfect information**
    - *Apparent* randomness

# Uncertainty != Skill

- Outcomes may depend on player skill
  - Hand-eye coordination challenges
  - Reaction-time and twitch challenges
  - Knowledge of optimal strategies
    - Read the walkthrough
- Varying skill level leads to an uncertain outcome
  - But challenges themselves are predictable
  - Players can train at a challenge over time
    - Become better
    - **Progression**

# Random Chance as Challenge

- Is random chance a good game design?
  - Flipping a coin, rolling a dice with no context
  - Player has no meaningful choice
  - All games require *some* uncertainty
    - Otherwise deterministic
    - Meaningful play requires decision-output causality
- But many games *are* random
  - Tetris
    - Have a choice in how to position random pieces
    - Hedge your bets to prepare for certain drops
      - The piece that's a line
  - RPG combat is based on rolling a dice
    - Armor the defender is wearing
    - Weapons the attack uses



# Expected value

- Outcome of actions is never the same
  - How is the choice meaningful then?
    - Whether to perform the action or not
    - Certain decisions are more fun than others
    - Psychological effect on other players
      - Jump scares, horror games
  - The sum averages out over many tries
    - Expected value = outcome x % success
  - If many outcomes (attempts) sum them together
    - Only applies if player can perform action repeatedly

# Psychology of Randomness

- Gambling is bad
  - House controls expected value
  - The house always wins
- Expected value (i.e. losing) only true over many tries
  - We might get lucky
  - Uncertainty is “fun”
- Players favour longshots
  - Rare event with a very high payoff
  - Especially if failure is cheap
- Players have “monte carlo syndrome”
  - After a series of bad results, expect a good result
  - Otherwise the game is “unfair”

# Imperfect Information as Challenge

- Players lack information about the game
  - May not know complete game state
  - May not know all of the (high level) rules
- Can reason about *likelihood*
  - Rules eliminate certain possibilities
  - Model opponent psychology
    - What is the Alien doing
  - Less precise than a model of *probability*
    - A “feeling” of randomness from strategic, social complexity
- *C.f. Counter Strike example*

# Making Information Imperfect

- Hide Information
  - Fog of war
  - Hidden moves
  - Hidden dice rolls / RNG
- Generate random noise
  - “Something” happened over there
- Who holds the information?
  - Information known to **all players**
    - The rules of the game
  - Information known to **one player**
    - My health, weapon held, ammunition remaining, where I am
  - Information known only to **the game**
    - The patterns of the enemies, the next sequence of challenges
  - **Randomly** generated information

# Avalon (2012)



# Trouble in Terrorist Town (2010)



# Level Design

- Good game design is about creating a series of interesting challenges
  - Player has inefficient means to achieve their objectives
  - Players become more skilled over time, more adept at using means
  - A “good” game is one where success of the player is largely determined by the skill of the player
- How should we **balance** rules and challenges in general for appropriate progression?
  - What are the *parameters* of the challenges
- How can we ensure or **assess engagement?**
  - Flow (Mihaly Csikszentmihalyi)
    - The mental state of operation in which a person in an activity is fully immersed in a feeling of energized focus, full involvement, and success in the process of the activity

# Reading

- Rollings and Adams chapter 7
- Rules of Play chapters 15, 17
- <http://www.cs.nott.ac.uk/~str/doc/counterstrike.pdf>