

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

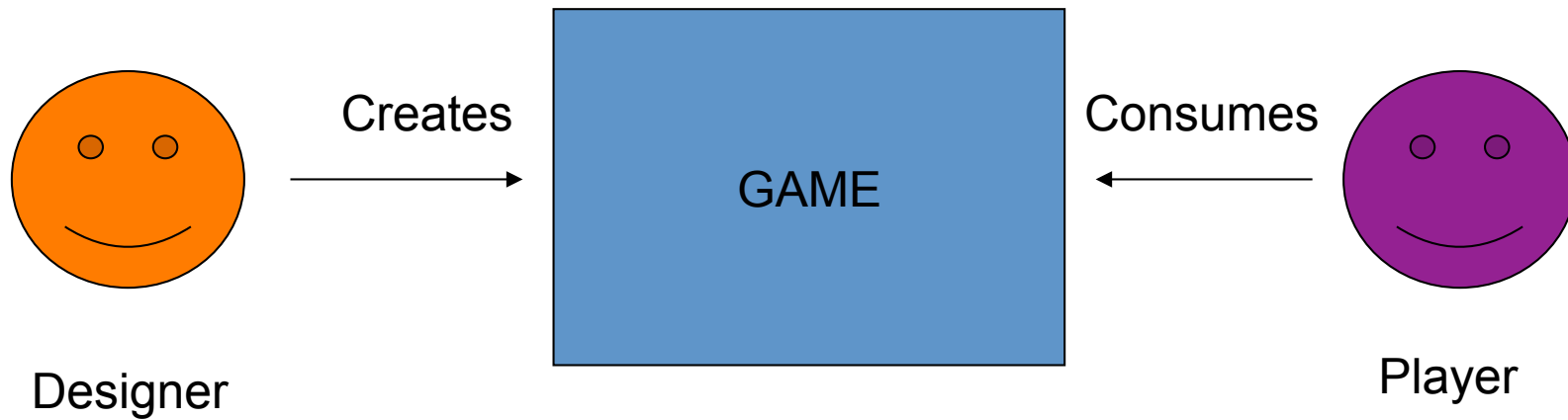
Meaningful Play and Choice

- 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

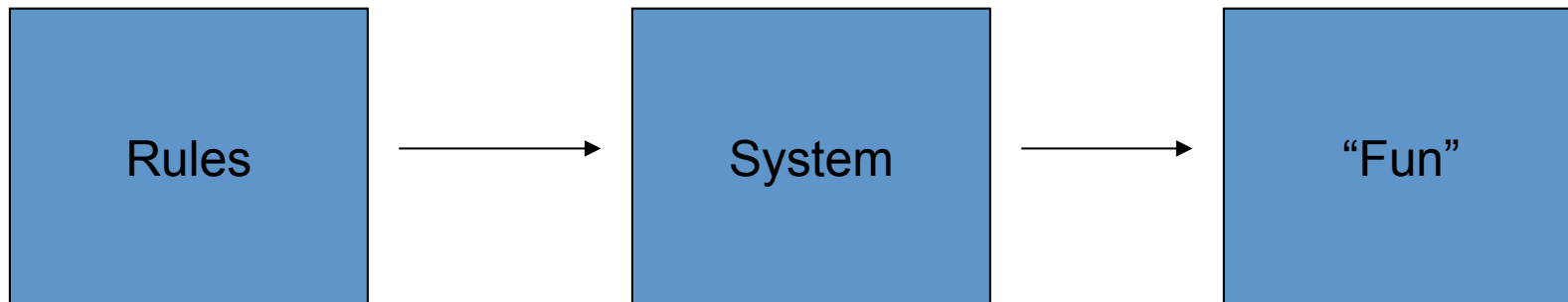
This Week

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

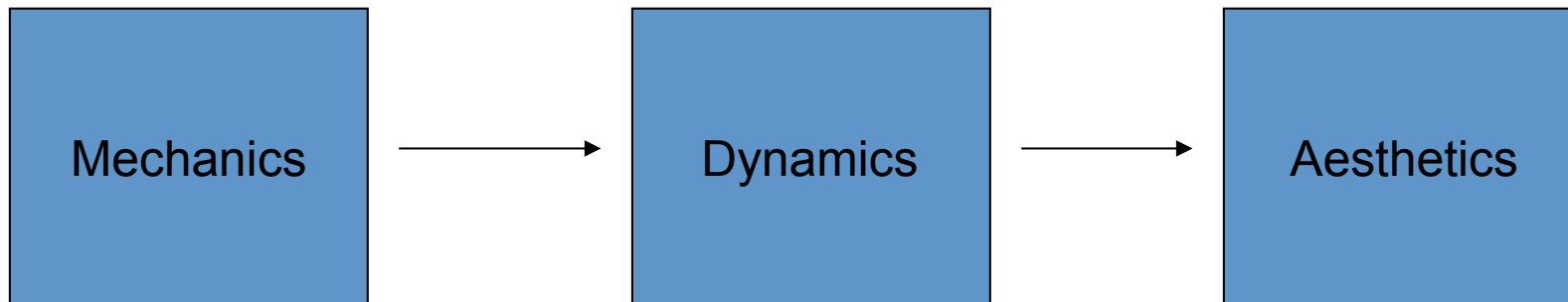
Production and Consumption



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



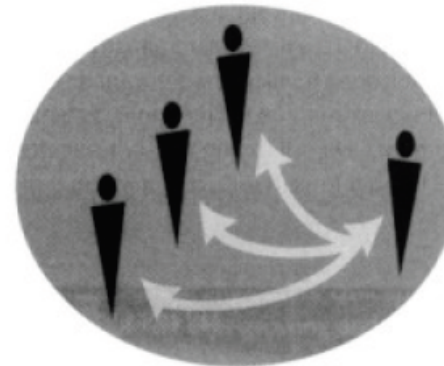
Single Player vs. Game



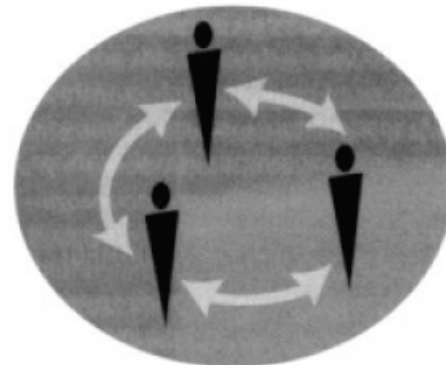
Multiple Individual Players vs. Game



Player vs. Player



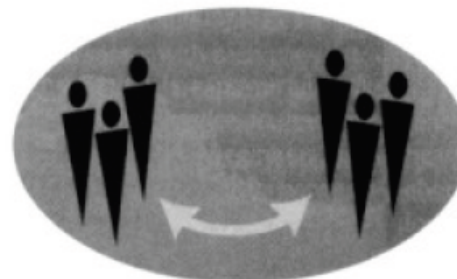
Unilateral Competition



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

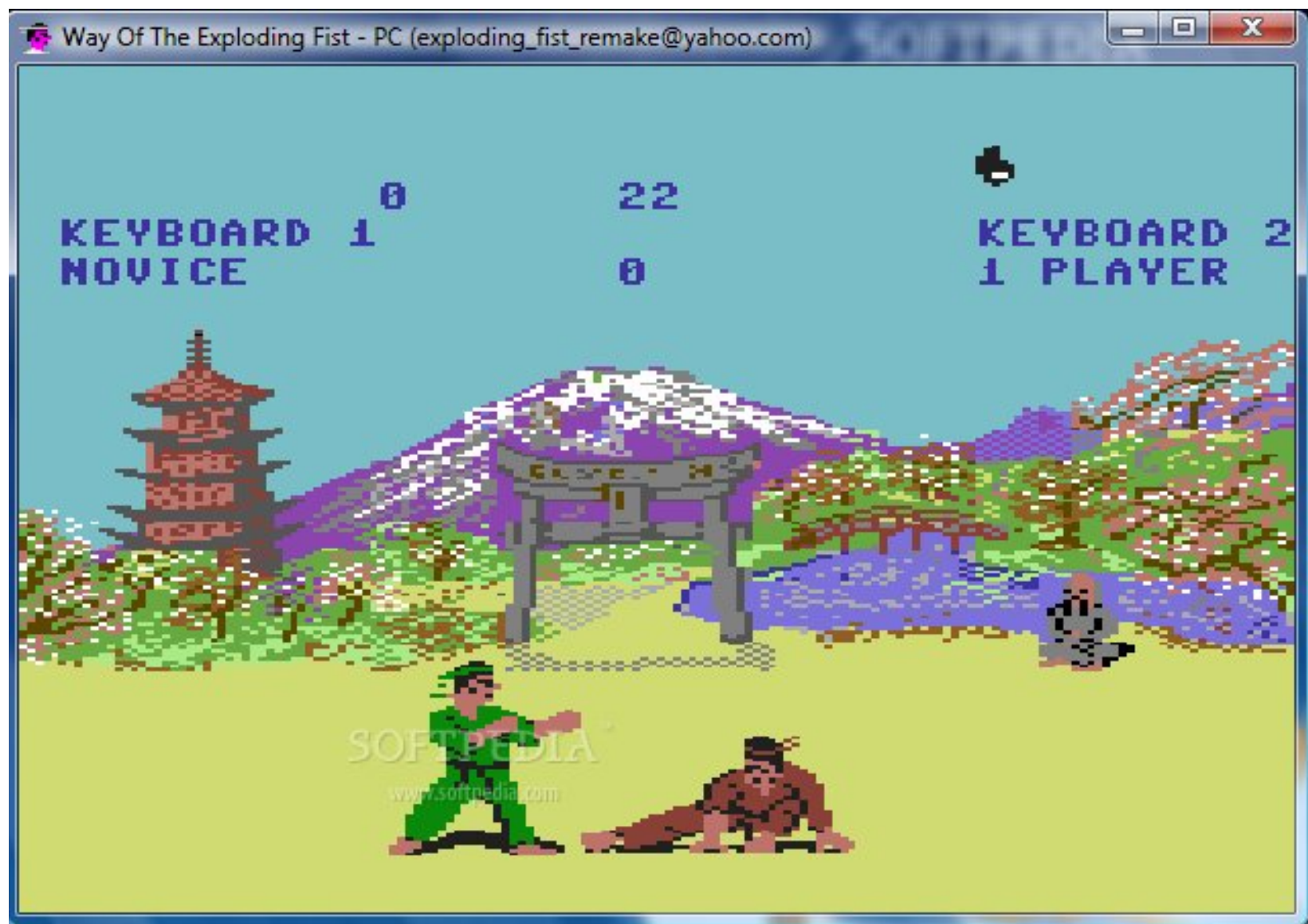
- Define game objects and allowable actions by the player
- Restrict and limit the scope of **Actions**
- Determine the effect of **Actions**
- Keep the game balanced

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



ProgressQuest - Radwhot (Pemphol)

Character Sheet		Equipment		Plot Development																																					
Trait	Value	Weapon	+11 Venomed Broadsword	<input checked="" type="checkbox"/> Prologue																																					
Name	Radwhot	Shield	+7 Studded Holy Tower Shield	<input checked="" type="checkbox"/> Act I																																					
Race	Enchanted Motorcycle	Helm	Gilded Mithril Mail	<input type="checkbox"/> Act II																																					
Class	Bastard Lunatic	Hauberk	Motheaten Diamond Mail																																						
Level	22	Brassards	+1 Studded Holy Platemail																																						
Stat	Value	Vambraces	+5 Cambric Gilded Chainmail																																						
STR	23	Gauntlets	+2 Mithril Mail																																						
CON	41	Gambeson	Festooned Titanium																																						
DEX	43	Cuisses	Fine Kevlar																																						
INT	22	Greaves	Banded Mithril Mail																																						
WIS	31	Sollerets	+1 Studded Titanium																																						
CHA	20																																								
HP Max	237																																								
MP Max	173																																								
Experience																																									
Spell Book <table border="1"> <thead> <tr> <th>Spell</th> <th>Level</th> </tr> </thead> <tbody> <tr><td>Nestor's Bright Idea</td><td>III</td></tr> <tr><td>Nonplus</td><td>I</td></tr> <tr><td>Curse Name</td><td>II</td></tr> <tr><td>Lockjaw</td><td>II</td></tr> <tr><td>Holy Batpole</td><td>I</td></tr> <tr><td>Eye of the Troglydite</td><td>III</td></tr> <tr><td>Tumor (Benign)</td><td>I</td></tr> <tr><td>Animate Tunic</td><td>I</td></tr> <tr><td>Grognor's Big Day Off</td><td>I</td></tr> <tr><td>Vitreous Humor</td><td>I</td></tr> <tr><td>Covet</td><td>I</td></tr> <tr><td>Roger's Grand Illusion</td><td>I</td></tr> <tr><td>Tumor (Malignant)</td><td>I</td></tr> <tr><td>Acrid Hands</td><td>I</td></tr> </tbody> </table>		Spell	Level	Nestor's Bright Idea	III	Nonplus	I	Curse Name	II	Lockjaw	II	Holy Batpole	I	Eye of the Troglydite	III	Tumor (Benign)	I	Animate Tunic	I	Grognor's Big Day Off	I	Vitreous Humor	I	Covet	I	Roger's Grand Illusion	I	Tumor (Malignant)	I	Acrid Hands	I	Inventory <table border="1"> <thead> <tr> <th>Item</th> <th>Qty</th> </tr> </thead> <tbody> <tr><td>Gold</td><td>2448</td></tr> <tr><td>triceratops horn</td><td>1</td></tr> </tbody> </table>		Item	Qty	Gold	2448	triceratops horn	1	Quests <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Fetch me a tuppence <input checked="" type="checkbox"/> Fetch me a bandage <input checked="" type="checkbox"/> Seek the Unearthly Gemet <input checked="" type="checkbox"/> Fetch me a rock <input checked="" type="checkbox"/> Placate the Fire Giants <input checked="" type="checkbox"/> Seek the Spectral Galoon <input checked="" type="checkbox"/> Fetch me a bucket <input checked="" type="checkbox"/> Fetch me a counterpane <input checked="" type="checkbox"/> Exterminate the Sphirwes <input checked="" type="checkbox"/> Seek the Mythic Sphere <input checked="" type="checkbox"/> Placate the Lurkers <input checked="" type="checkbox"/> Seek the Magnificent Corset <input checked="" type="checkbox"/> Fetch me a trowel <input checked="" type="checkbox"/> Seek the Enchanted Tiara <input checked="" type="checkbox"/> Deliver this newspaper <input checked="" type="checkbox"/> Seek the Austere Brooch <input checked="" type="checkbox"/> Fetch me a ladder <input checked="" type="checkbox"/> Fetch me a newspaper <input checked="" type="checkbox"/> Seek the Spectral Gimcrack <input type="checkbox"/> Fetch me an egg 	
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Executing 2 preadolescent Rubber Golems...



Resources

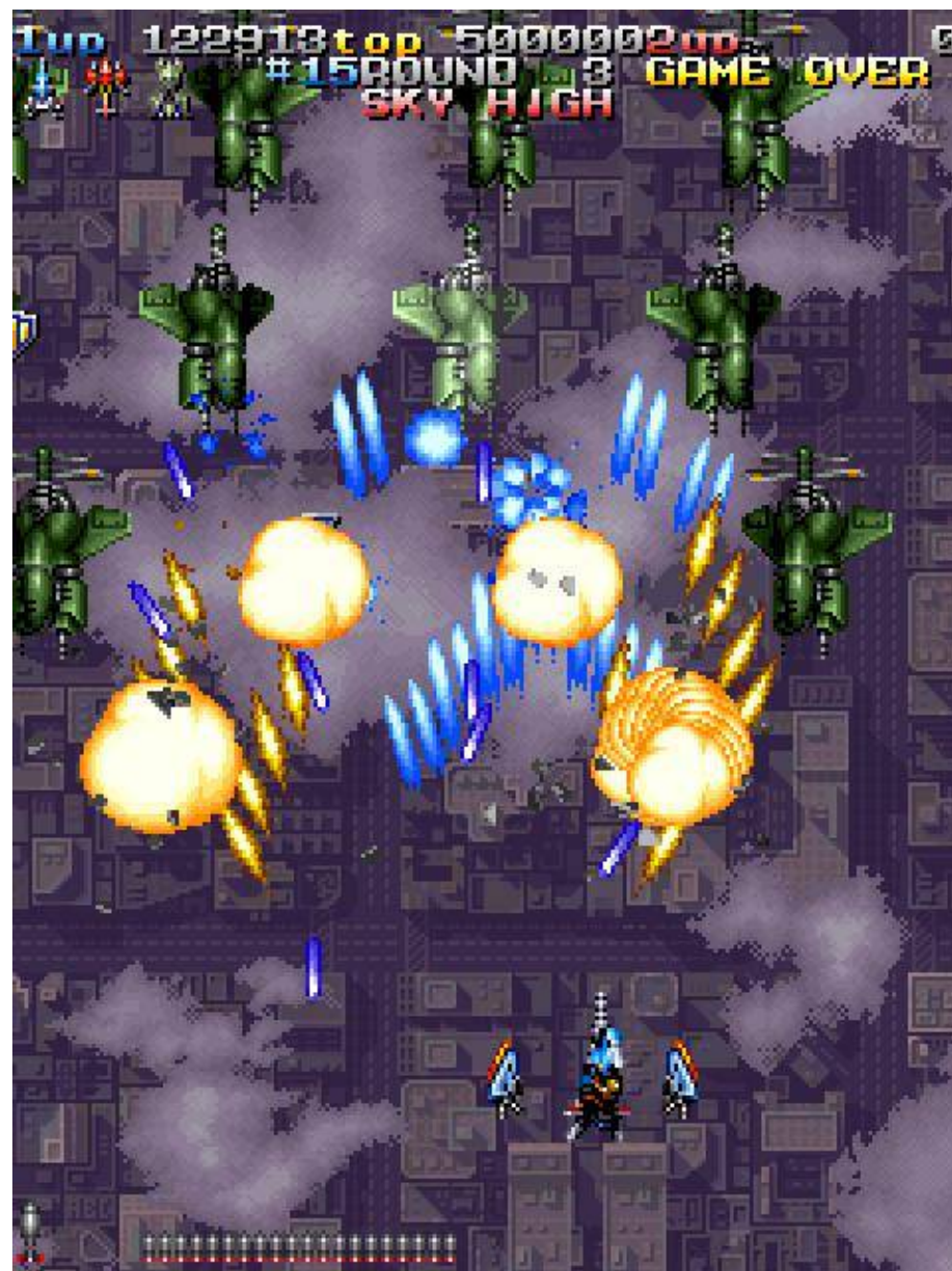
- Artificial game “currency” creates dynamic play
- Lives
 - Only have 3 lives
- Health, currency, weapons and power-ups, armour, potions
- Terrain
 - Must capture and hold terrain in strategy game
- Time
 - Must complete the level within a certain time
- Must have utility and balanced scarcity, otherwise 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

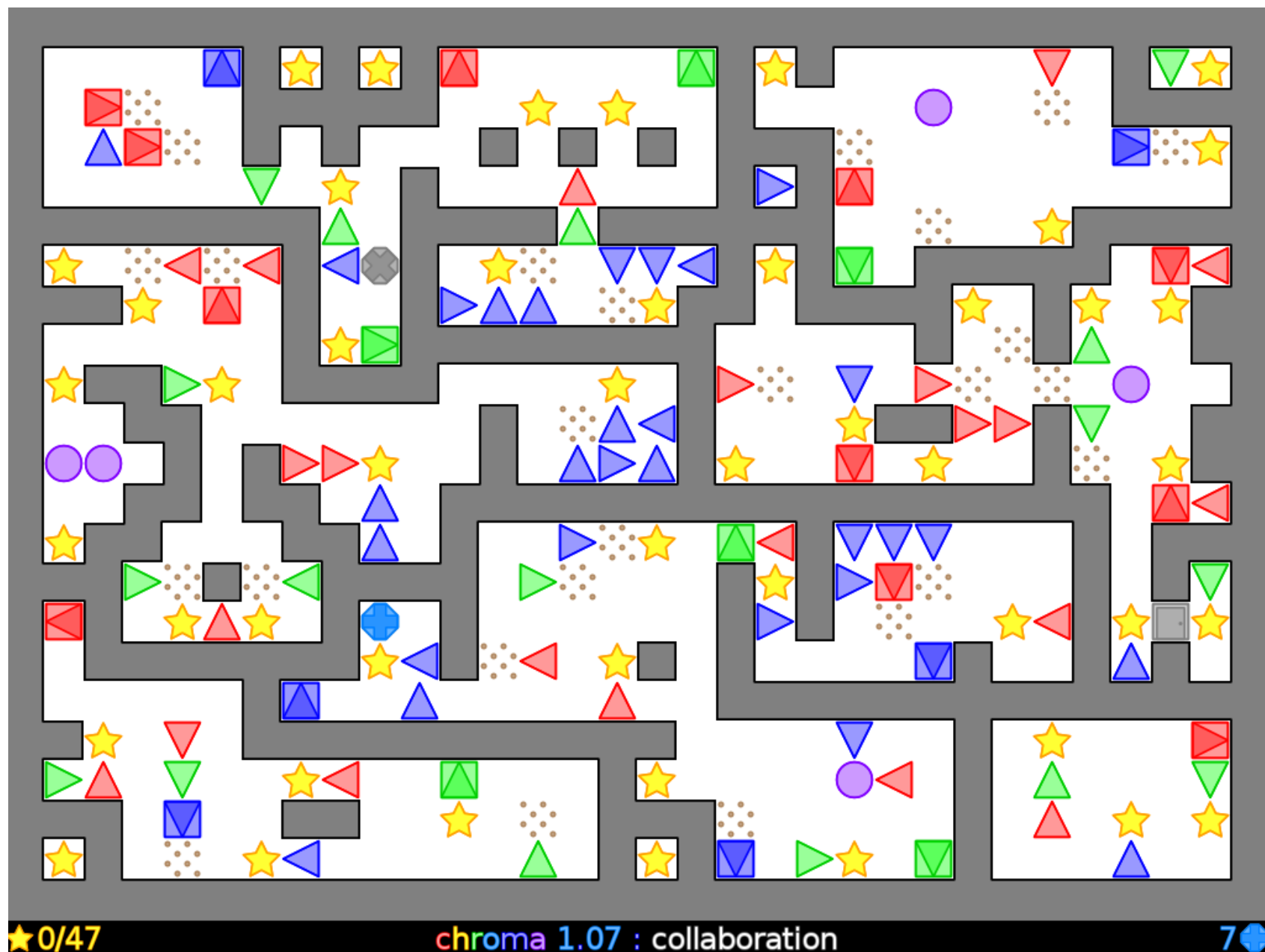


Challenges

- 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

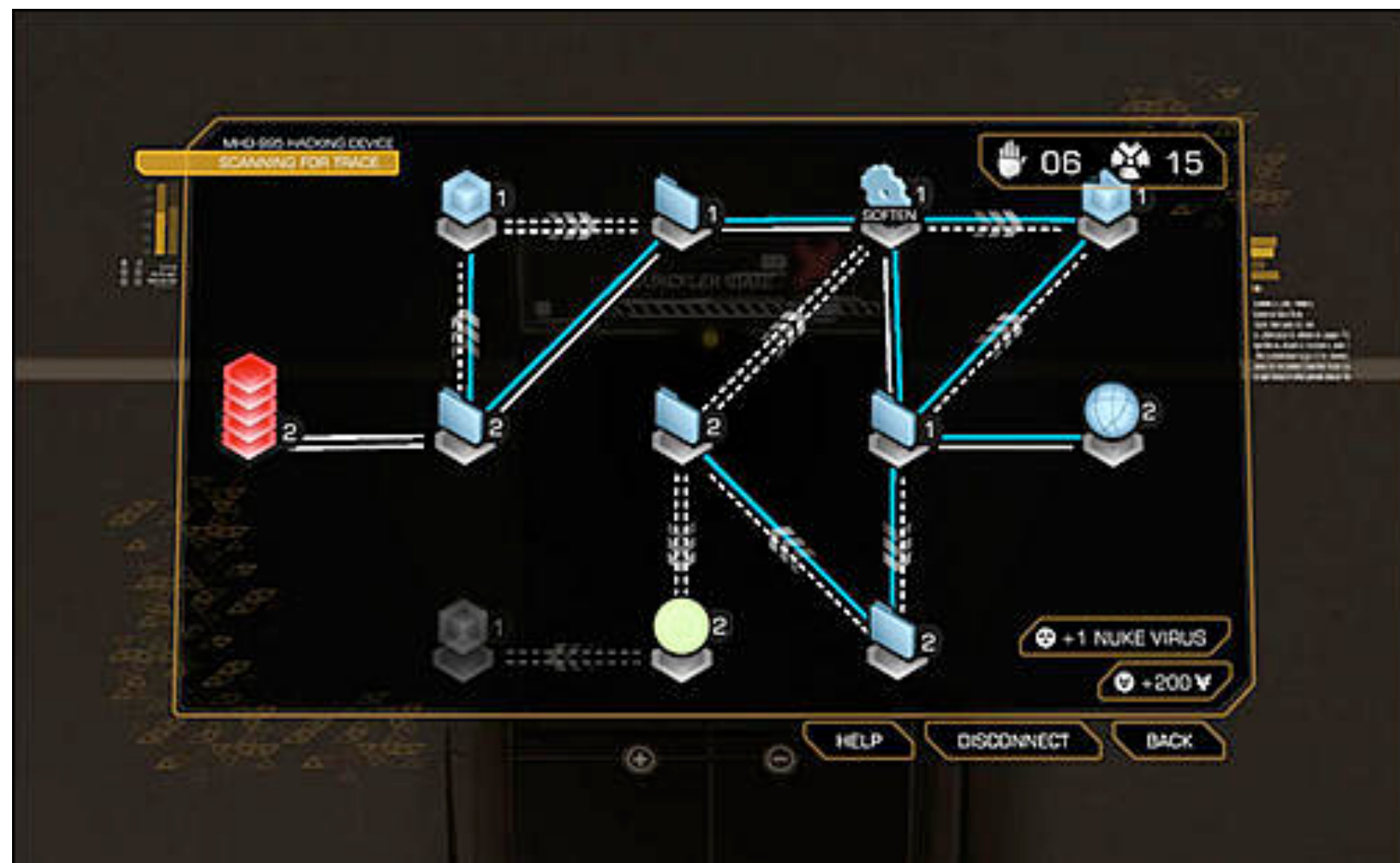
- The application of pure challenges to a particular game play situation or style
- A combination of one of more pure challenges
- Remember **goals** and **objectives**?

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