G54GAM - Games

- Dramatic Elements of Game Play

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

Formal Elements of Game Play

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

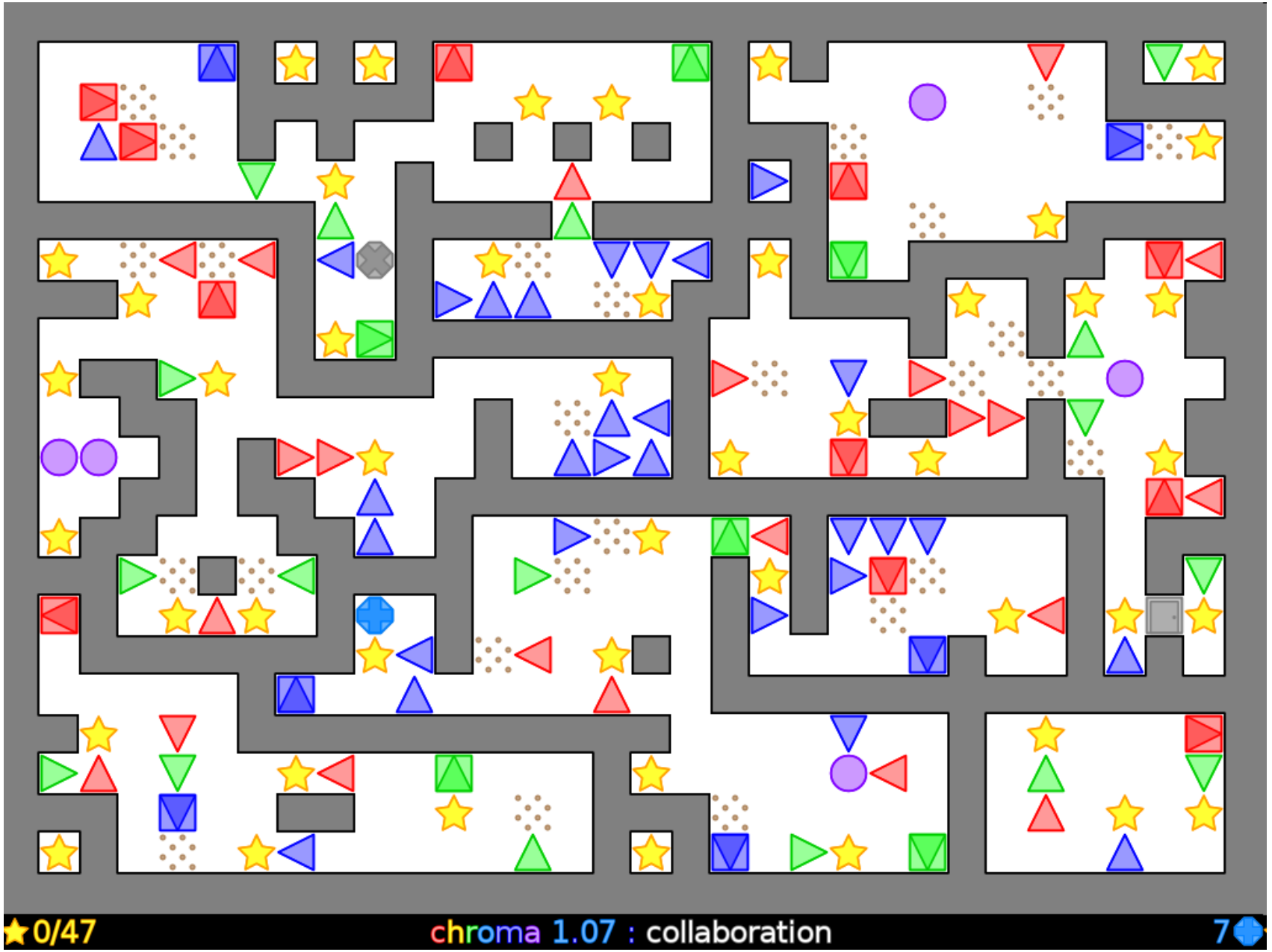
Think of a game that you found challenging

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

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


0/47
chroma 1.07 : collaboration
7


Menu (F10)
9150
7550
10400
Mage
Level 6
60/60
Armor: 0
Damage: 5-9
Range: 2
Sight: 9
Speed: 8
Magic:
82

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


FLAMMABLE
99
79
18
115

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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LAW
YOSHIMITSU

“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

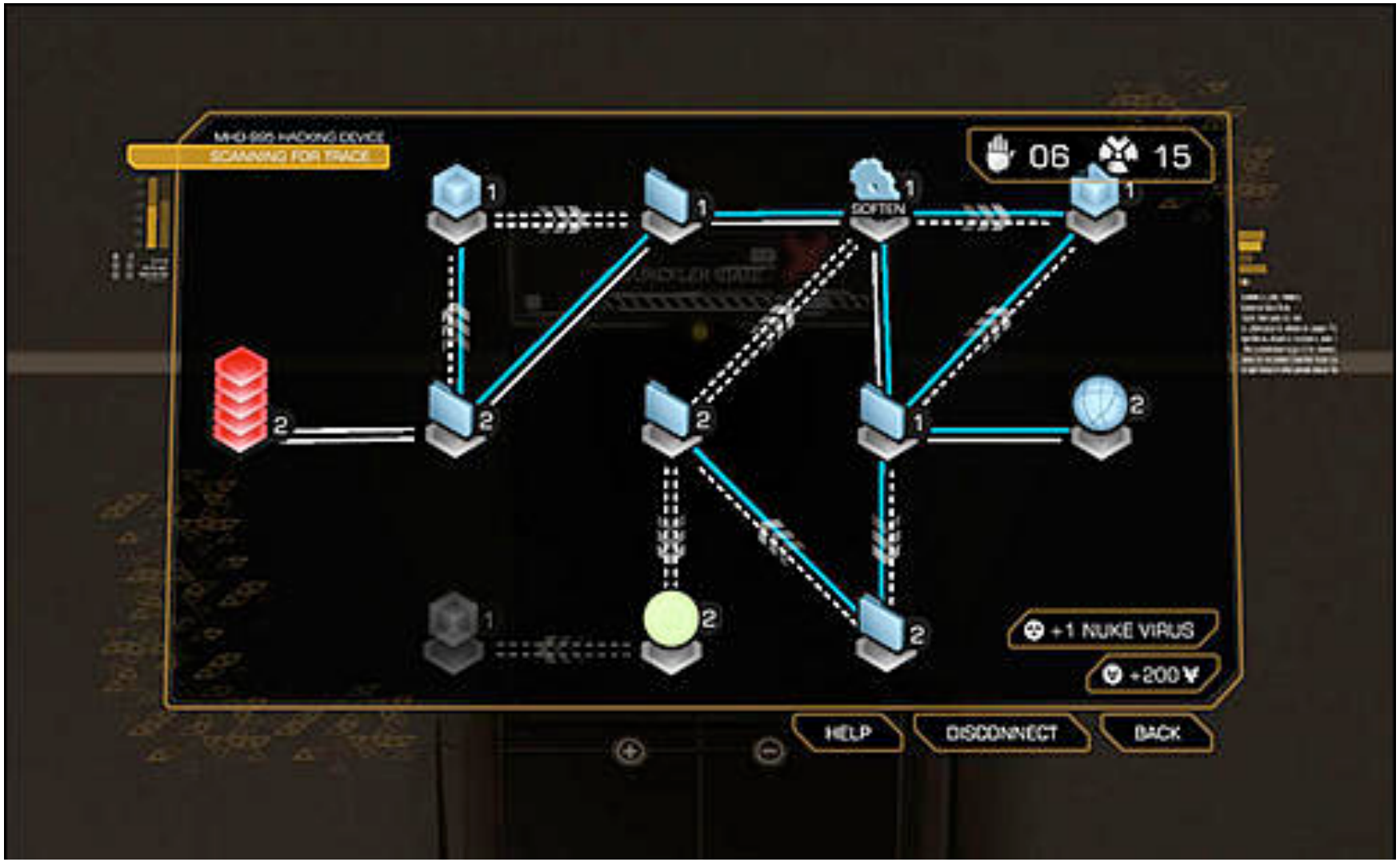
- The application of pure challenges to a particular game play situation or style
- A combination of one of more pure challenges
- Remember **goals** and **objectives**?

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


SCANNING FOR TRACE
06
15
SOFTEN
+1 NUKE VIRUS
+200 ¥
HELP
DISCONNECT
BACK

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

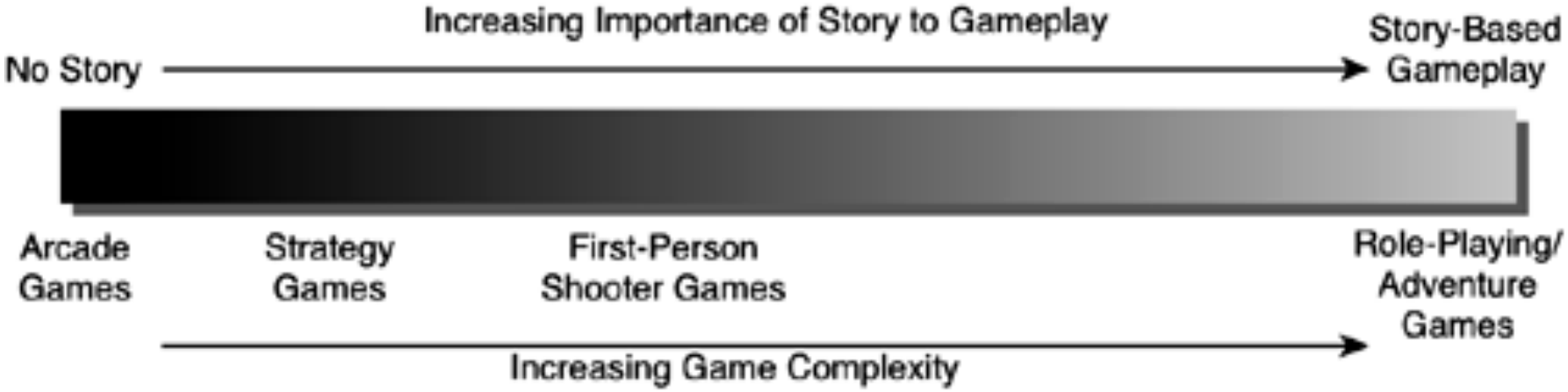
- The movement of resources
- Simple Economy of an FPS
  - Ammunition is obtained by finding, consumed by firing weapons
  - Health is obtained by finding medikits, consumed by being hit
- Accumulate the most of something
  - Money - Monopoly
- Achieve an economic balance
  - Sim City

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

Dramatic Elements

- Challenge
- Play
- Narrative
  - All games involve some kind of story or narrative to a greater or lesser extent
  - Premise
    - The context for the action within the game


Increasing Importance of Story to Gameplay
No Story
Story-Based Gameplay
Arcade Games
Strategy Games
First-Person Shooter Games
Role-Playing/ Adventure Games
Increasing Game Complexity

Narrative Components

- Premise
- Characters
- Developing Story
- Conflict and Dramatic Arcs

Premise

- Establishes the action of the game within a setting or metaphor
- Sets…
  - Time and place
  - Main characters
  - Objective and action that propel story forward
- Can be simple or complex
- Makes the formal system **playable**
- Create an emotional appeal to the game

Premise

- Space Invaders
  - Set on a planet attacked by aliens
  - An anonymous protagonist is responsible for defending the planet from the invaders
  - Story begins when the first shot is fired
  - Shoot aliens (not abstract blocks on a screen)
- Grand Theft Auto San Andreas
  - Set in fictional town called San Andreas
  - Return after 5 year absence to find family and friends in disarray
  - Story begins after cut-scene introduction

Characters

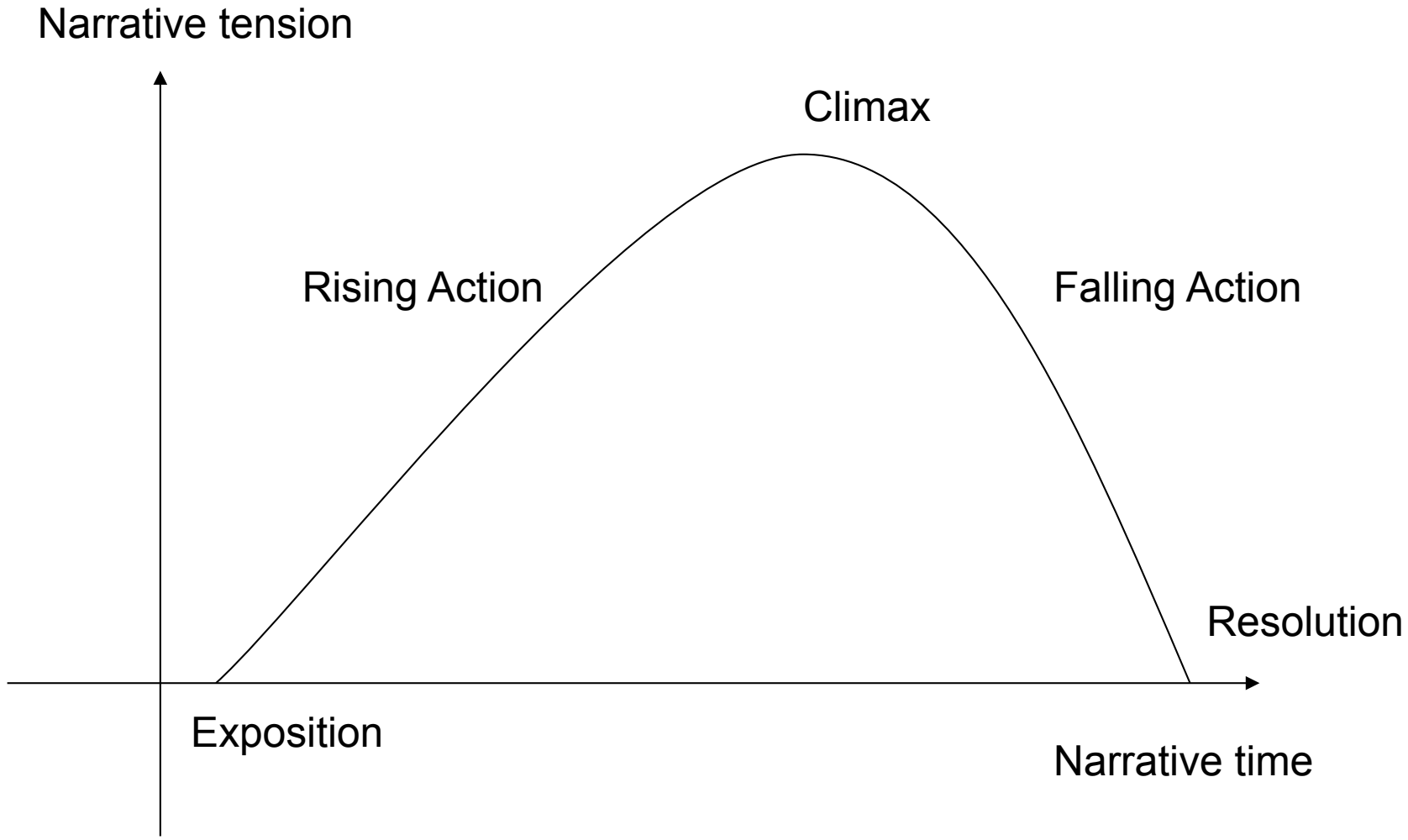
- Story is told through the actions of characters
- Player identifies with characters and the outcomes of their goals
- Protagonist (main character)
  - Engagement with challenges creates conflict
- Antagonist
  - Opposes attempts to solve the problem
  - A person or some other force
- Major / Minor
  - Level of impact on the story
- Round / Flat
  - Depth
  - Realism of personality
- Dynamic / Static
  - Change in personality
  - Stock Character
- Recognisable Stereotypes
  - Good, evil, traitor

Conflict and Dramatic Arcs

- Conflict is the key to a good drama
- Keeps players from accomplishing goals too easily, draws players into the game emotionally by creating a sense of tension as to the outcome
- Traditional drama
  - Conflict occurs when protagonist faces obstacle/problem that keeps them from accomplishing their goal
- Games
  - Conflict from other players, obstacles, other forces/ dilemmas

Conflict and Dramatic Arcs

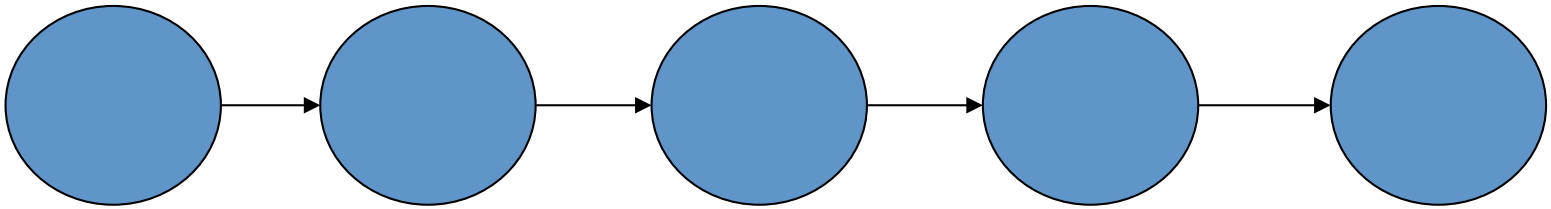
- Conflict must escalate to provide drama
- Escalating conflict creates tension
- Tension gets worse before it gets better
- A dramatic arc describes the amount of dramatic tension in a story


Narrative tension
Climax
Rising Action
Falling Action
Resolution
Exposition
Narrative time

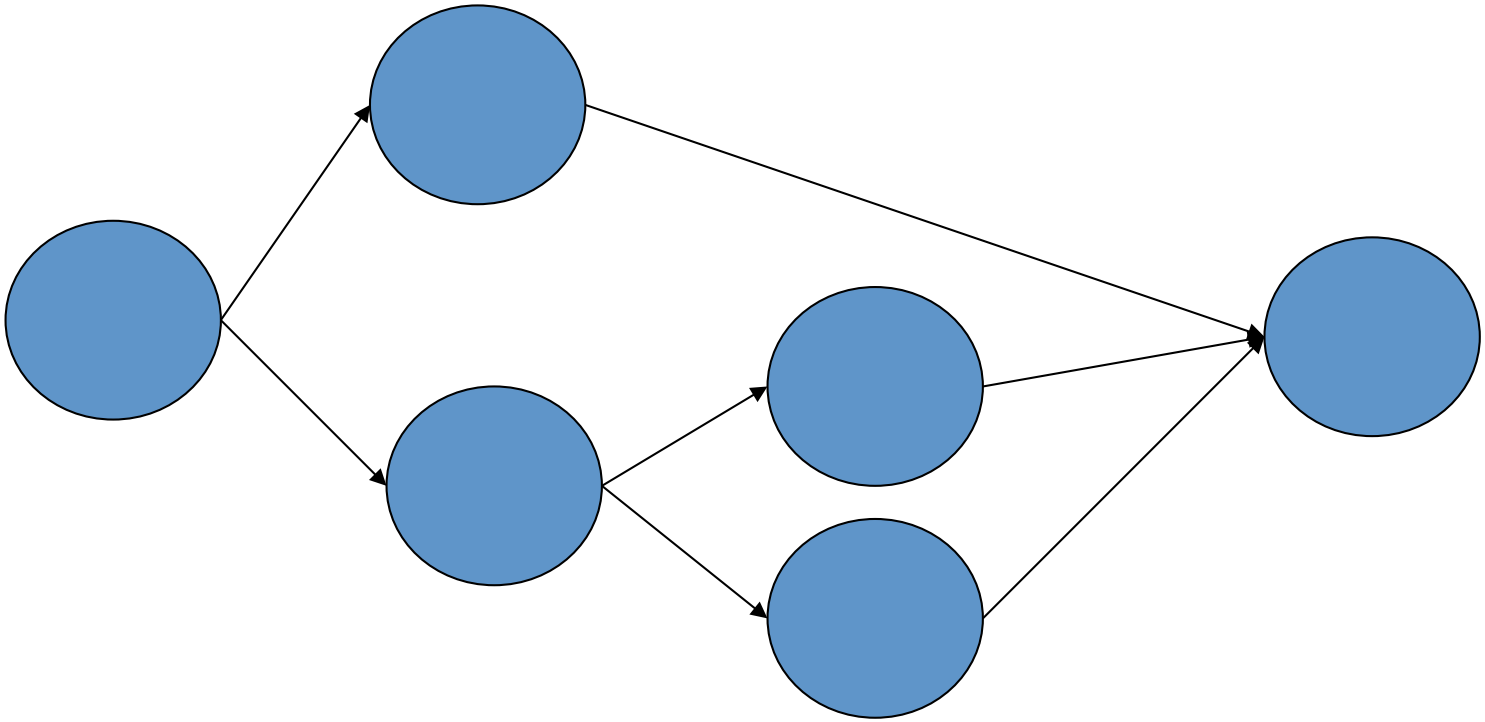
Developing Story

- Conventional Linear narrative
  - Books, plays, movies
  - Audience experiences story that progresses from one point to the next as determined by an author
  - Audience not an interactive participant, cannot change outcome of the story
- Games
  - Player is an interactive participant
  - Can potentially change short or long-term outcome (non-linear)
  - Story potentially limited to back-story (premise)

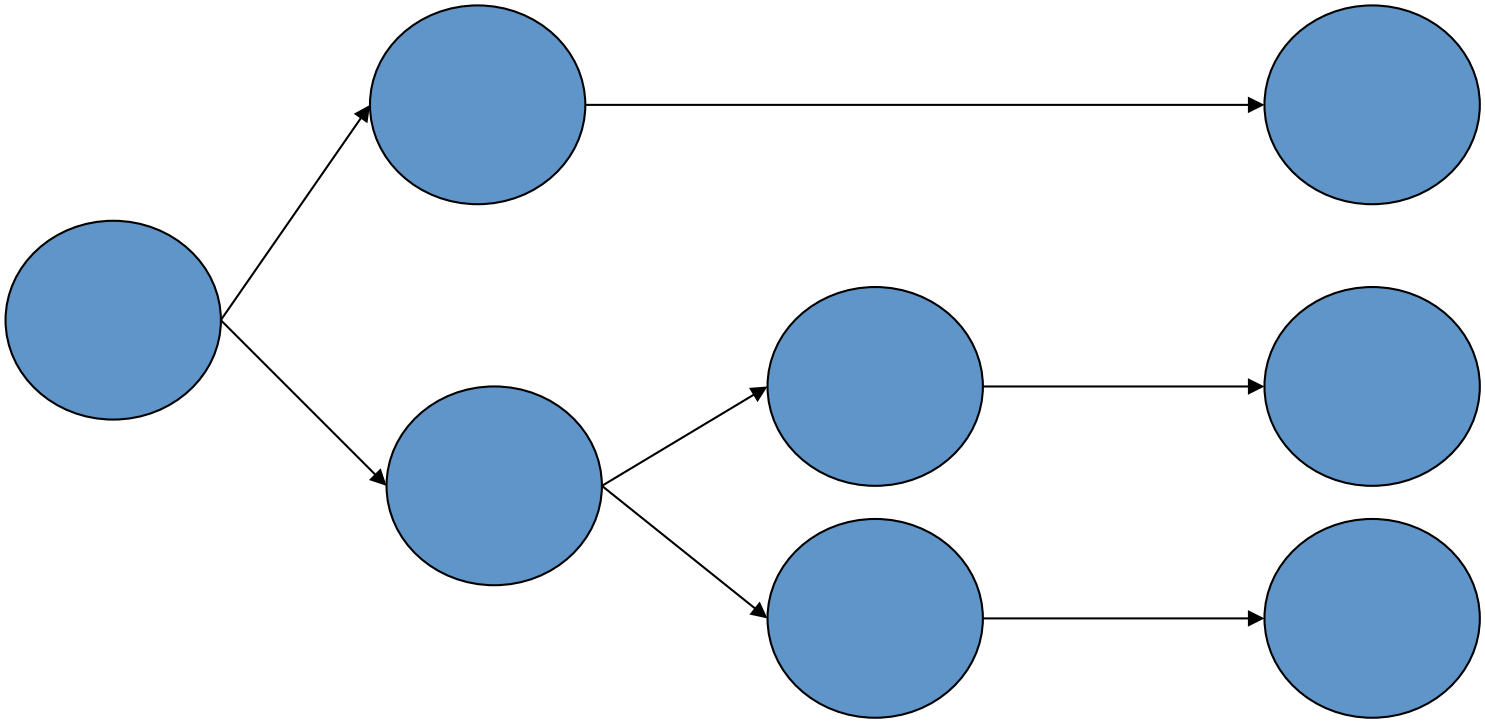
Linear Narrative



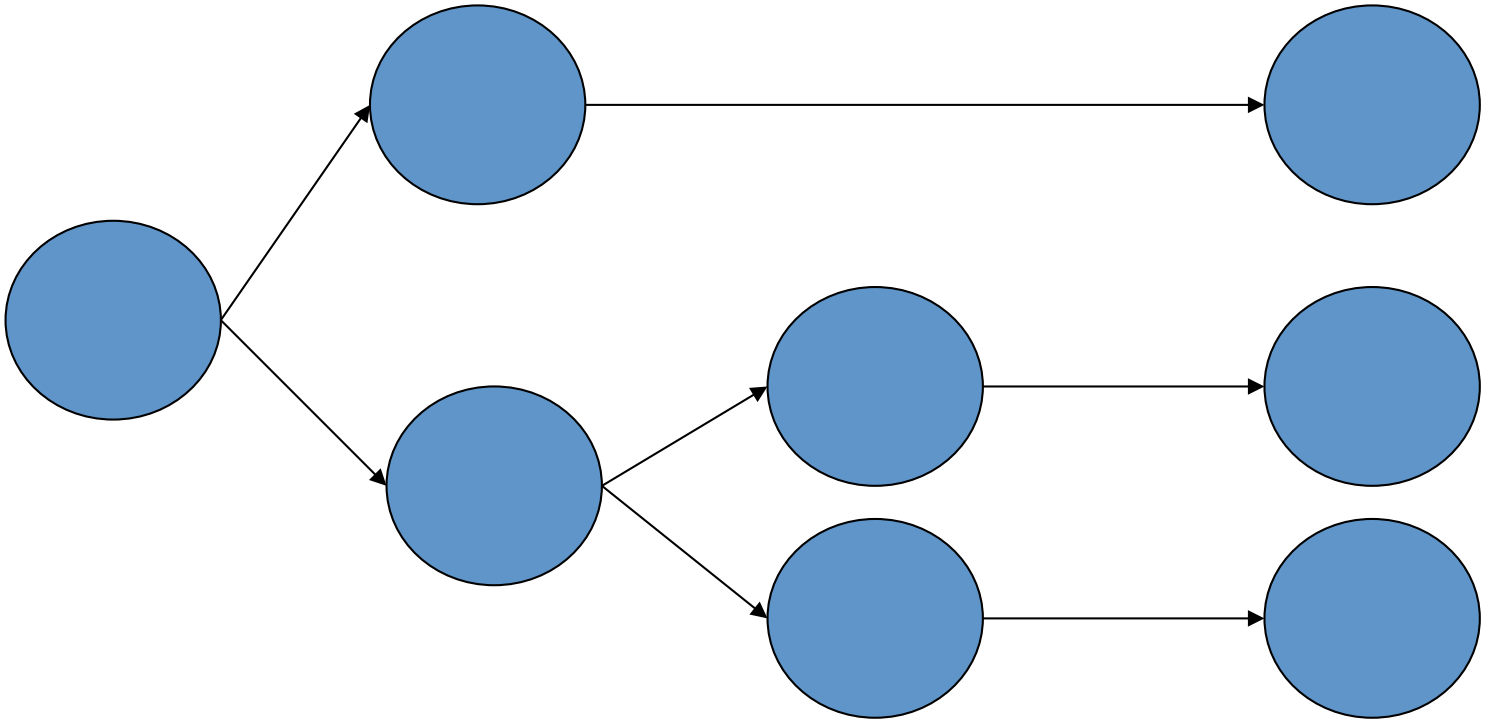
Branching Narrative



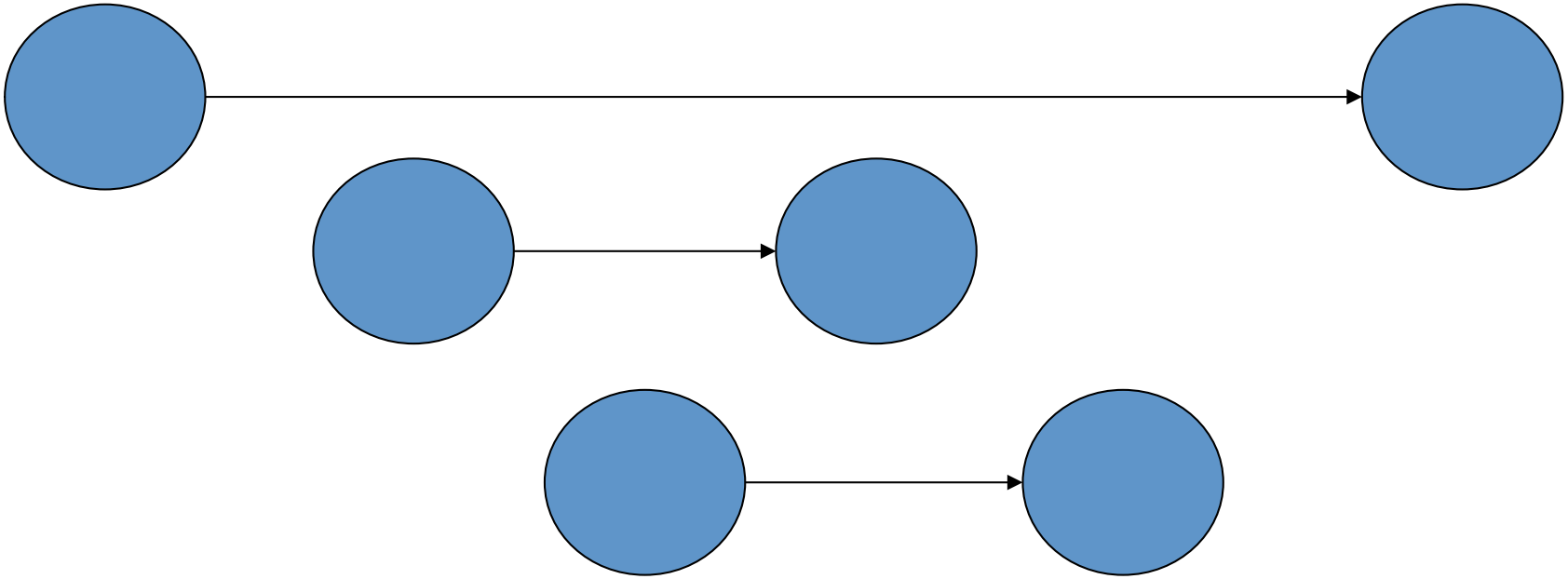
Branching Narrative (Open)



Branching Narrative (Open)



Concurrent Narratives

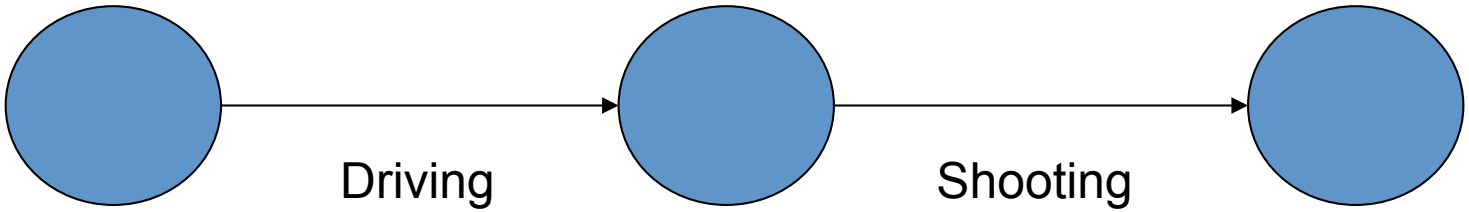


Grand Theft Auto – San Andreas

Cut Scene

Cut Scene

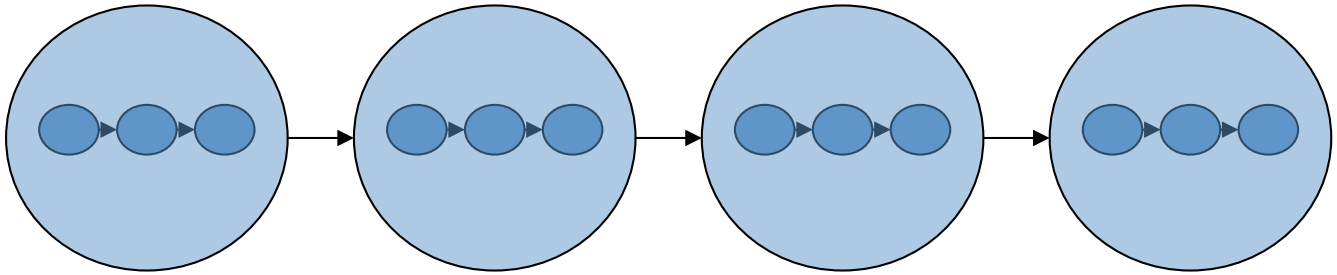
Cut Scene



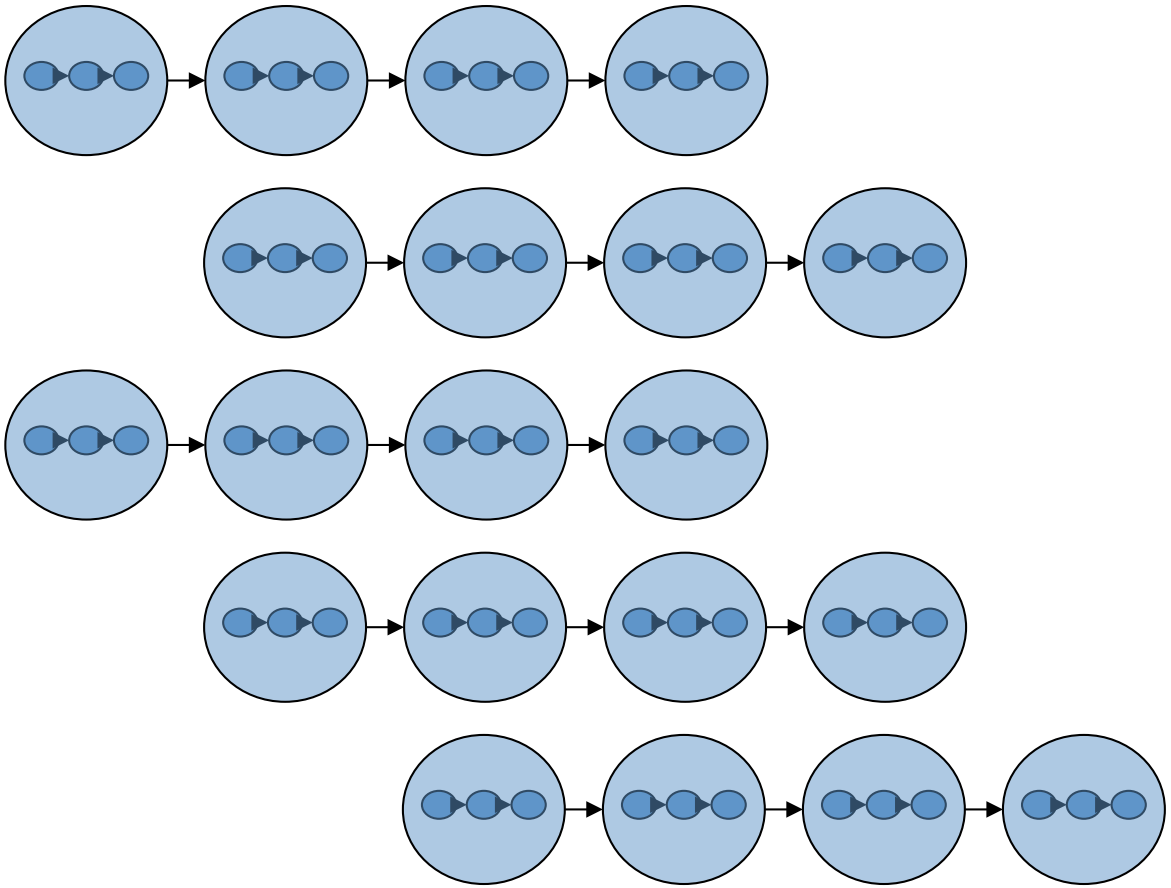
Driving

Shooting

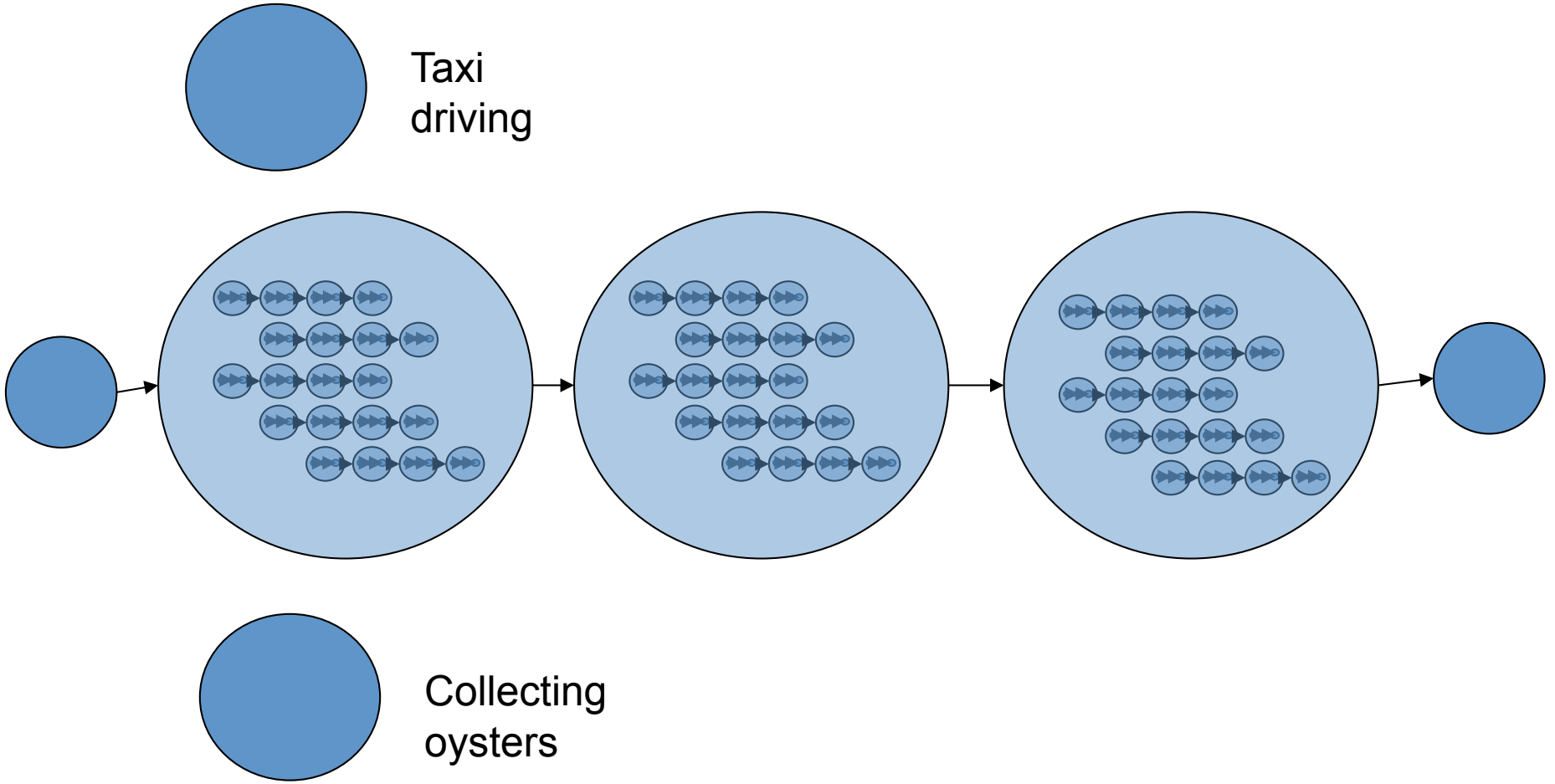
Grand Theft Auto – San Andreas



Grand Theft Auto – San Andreas



Grand Theft Auto – San Andreas



Where are we?

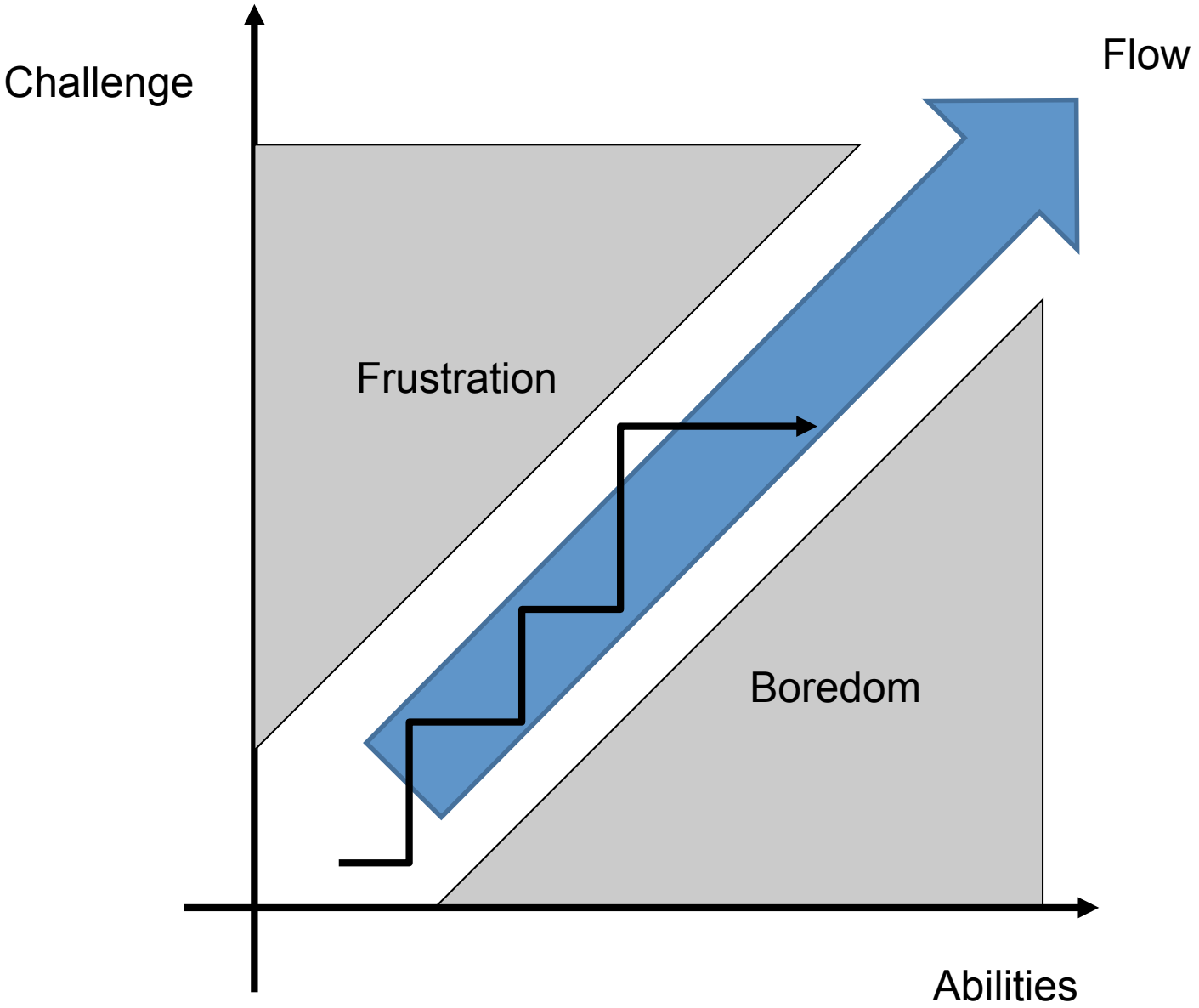
- Formal elements
  - Core game mechanic
  - Game play
  - How we play
- Dramatic elements
  - Challenges
  - Narrative and Story
  - Why it is exciting to play
- What keeps us playing?

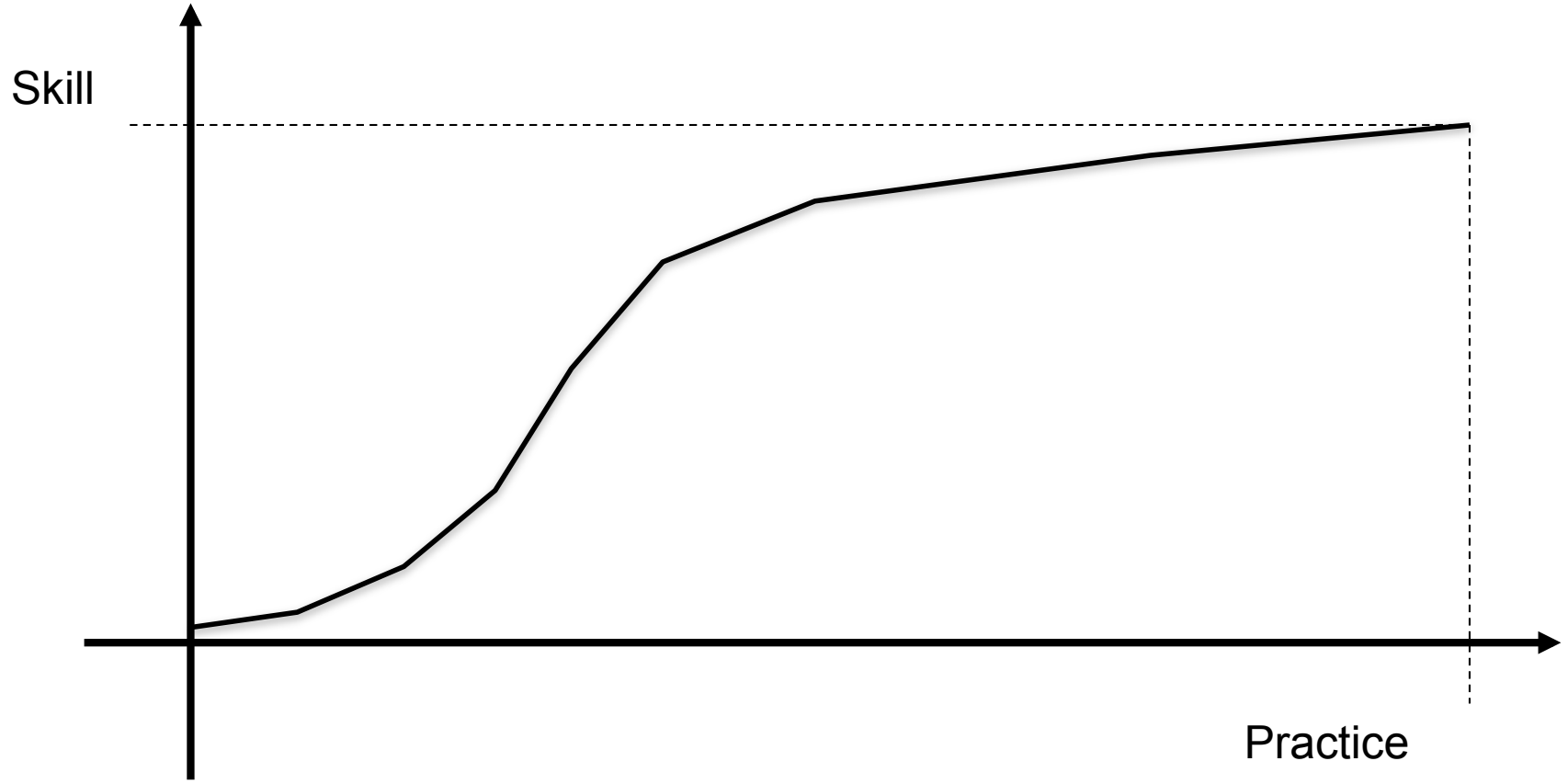
Progression and Longevity

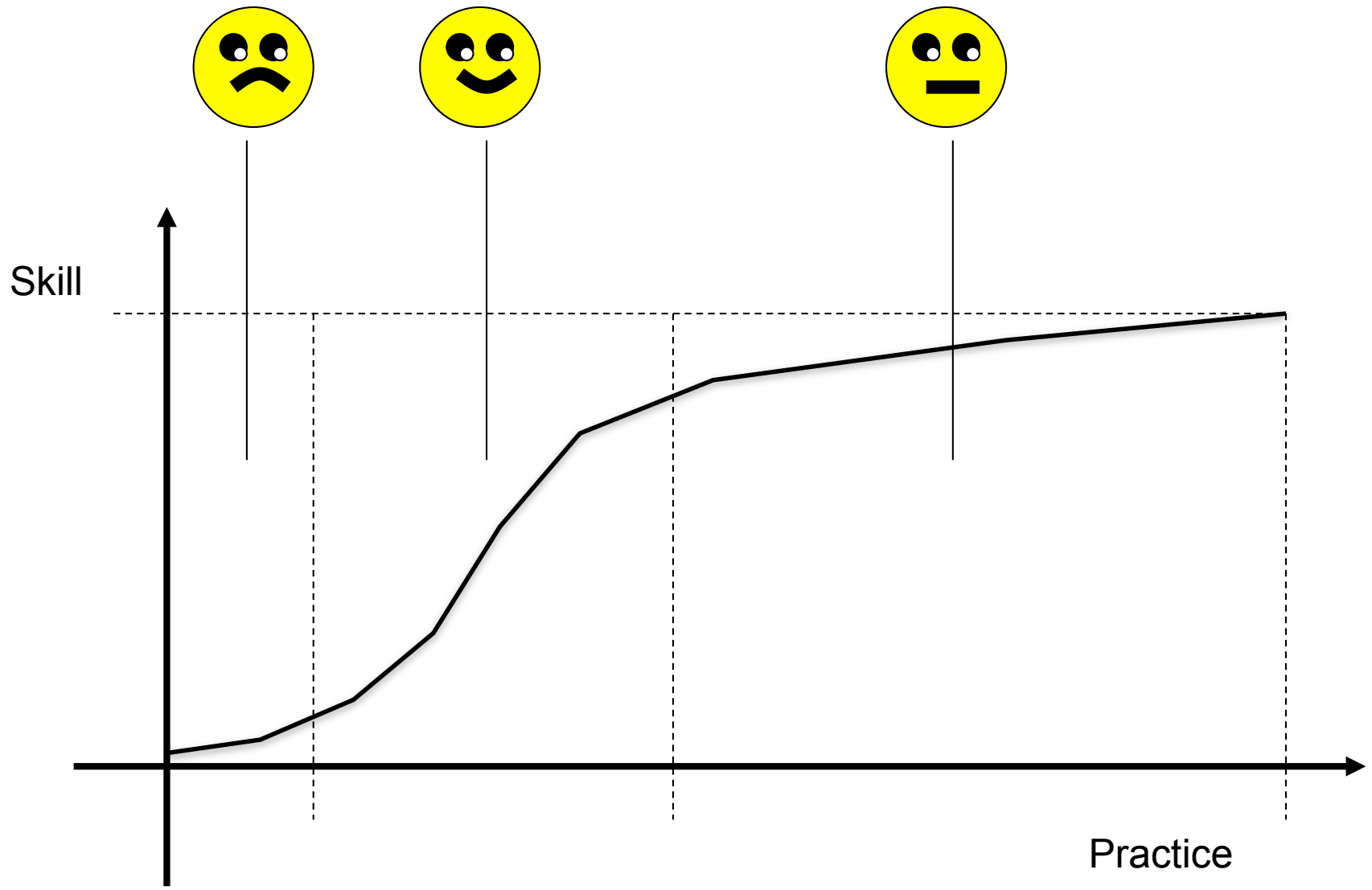
- Good game design is about creating a series of interesting challenges and narratives
- Games become dull if the challenges and narrative never change
- Modulate and ration challenges to keep the player engrossed in the game
- Challenges and narrative can be…
  - Concurrent
  - Contiguous
  - Nested

Flow

- Flow
  - 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
  - Mihály Csíkszentmihályi

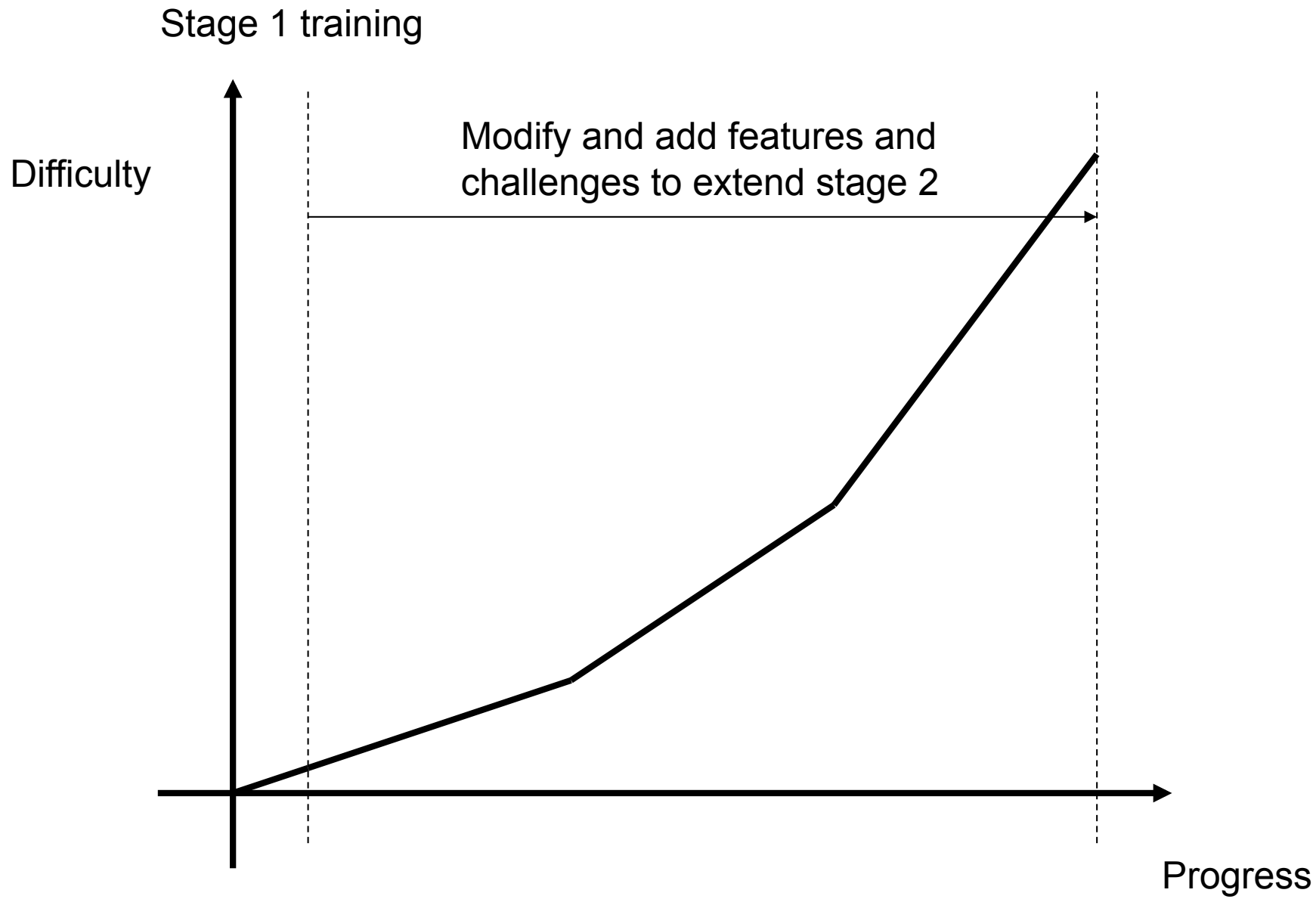

Challenge
Flow
Frustration
Boredom
Abilities


Skill
Practice


Skill
Practice

Progression

- Stage 1
  - Slow progress
  - High frustration
  - A lot to learn
  - Design should support the player
- Stage 2
  - Skill increasing
  - Aware of success
  - Ideal state
  - Make it last as long as possible
- Stage 3
  - Mastery of the challenge
  - Boredom
  - Unlikely to complete the game


Stage 1 training
Difficulty
Modify and add features and
challenges to extend stage 2
Progress

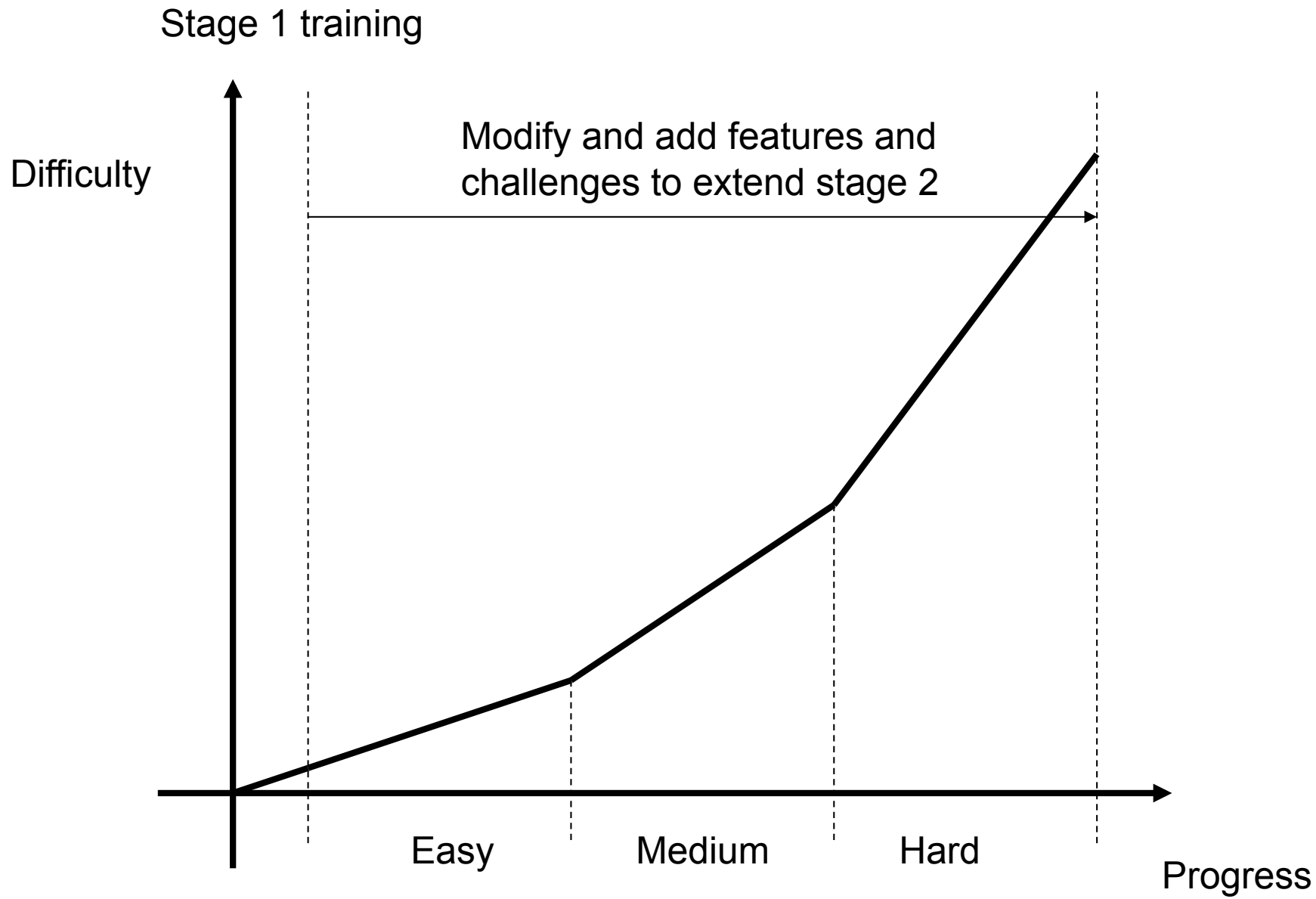
Progression

- Exploration
  - Unlock new areas
  - Re-use an existing area
  - New opponents, obstacles and environments
- Conflict
  - New abilities
  - New or harder opponents and obstacles
- Economy
  - Increase resource scarcity
  - New or harder opponents and obstacles


LSC - Los Santos Courier
BMX - BMX Challenge
OG - Ohliad Challenges
SFC - San Ferro Courier
NRG - NRG-500 Challenge
LVC - Las Venturas Courier
LVC
SFC
NRG
BMX
OG
LSC

Poor Progression

- Equivalent Features
  - Look different, but perform a very similar function to an existing feature
  - Different coloured enemy
- Arms Race
  - Player gets more powerful, enemies get more powerful
  - Game play and challenge does not change
- One Trick Pony
  - A challenge that is completely different to previous challenges, does not fit with the game genre
  - Racing game that suddenly requires puzzle solving


Stage 1 training
Difficulty
Modify and add features and challenges to extend stage 2
Easy
Medium
Hard
Progress

Simple Progression Dynamic

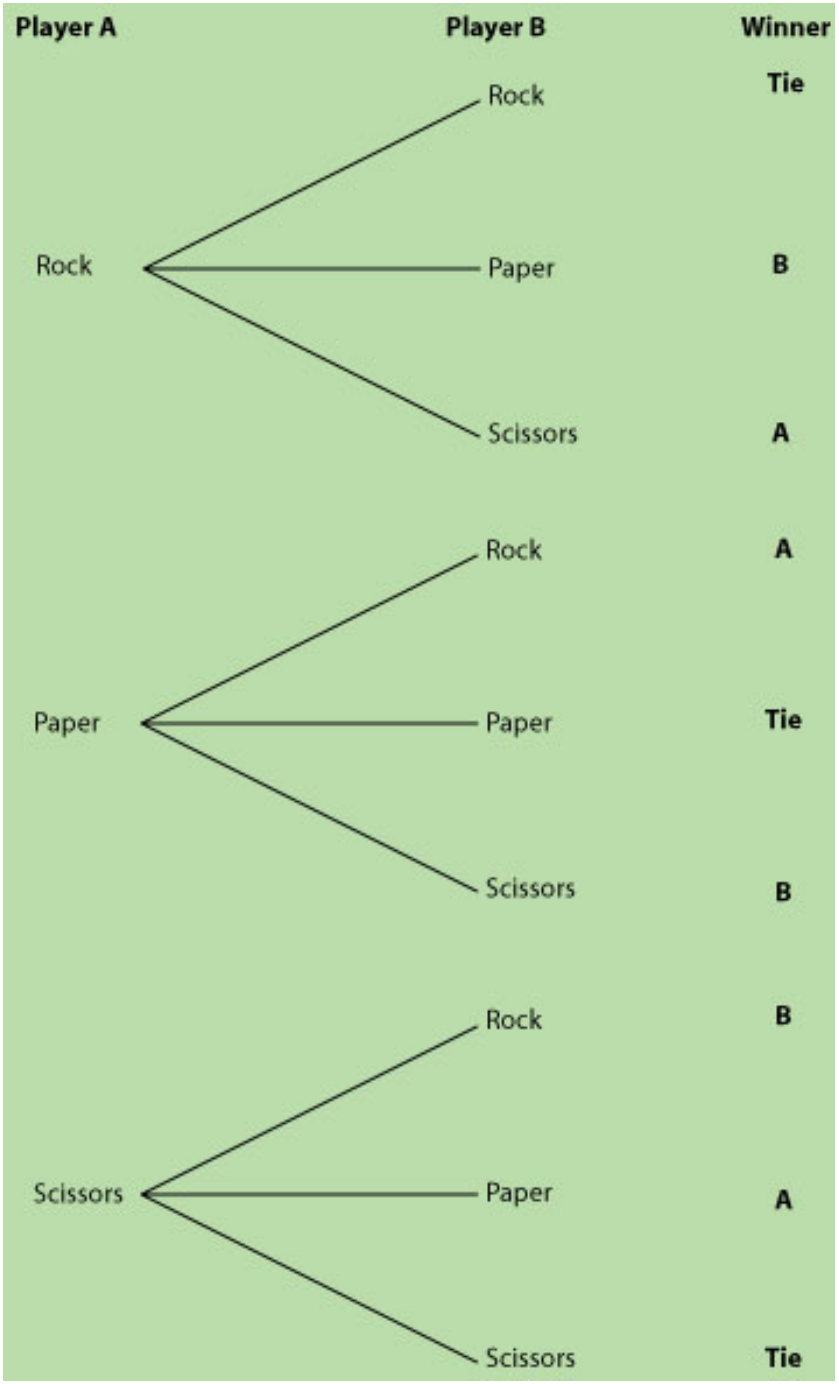
- Create a number of challenges or levels and group by difficulty
- Easy
  - All players should be able to complete these challenges
  - Design for those who are new to the genre
- Medium
  - Most players should be able to complete these challenges, including the game designer
  - Design for casual players
- Hard
  - Good players should eventually be able to complete these challenges

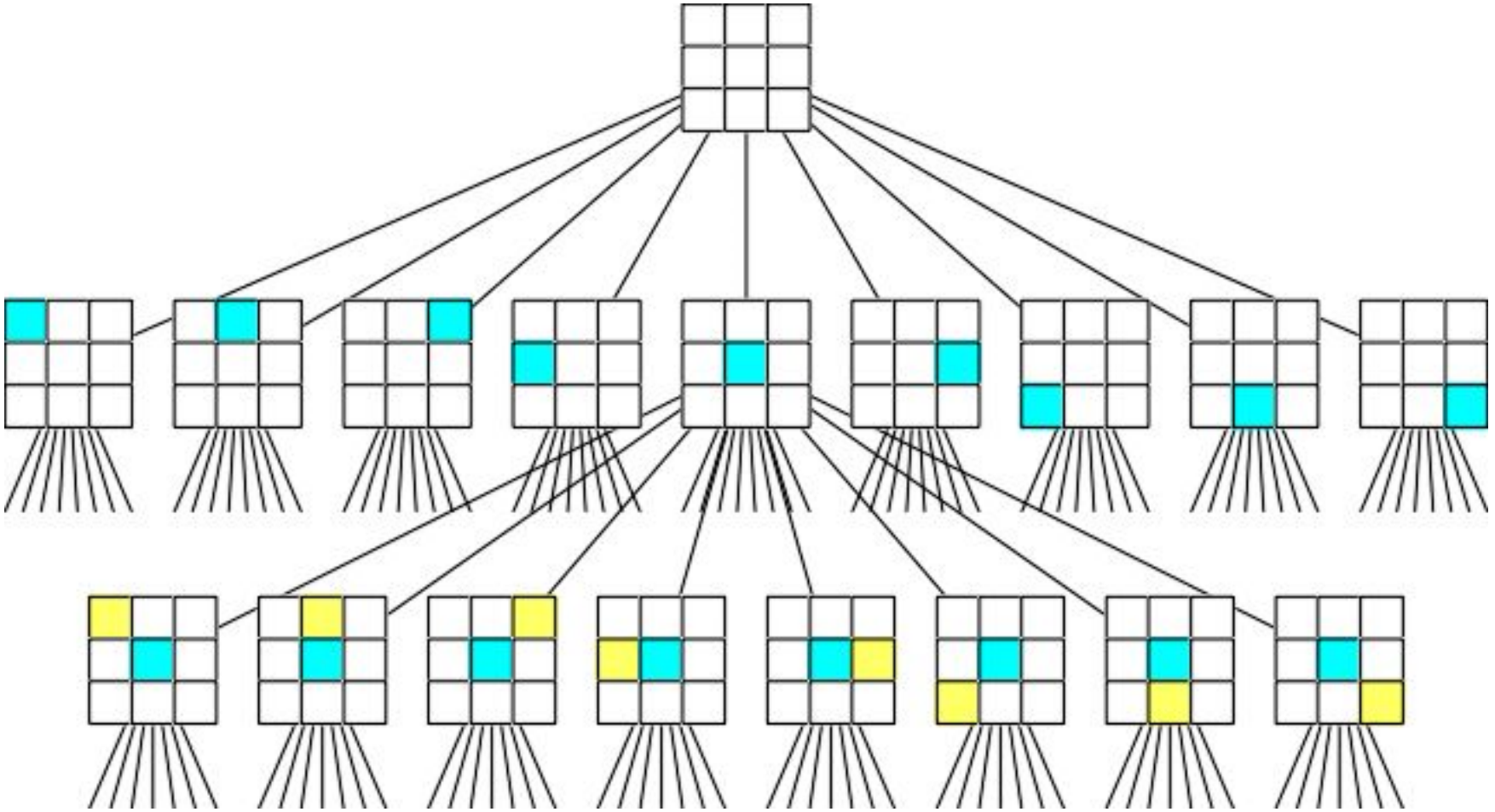
Balance

- Can make or break a game
  - Look, sound and even play well
  - Can still be a failure
- We may have all the formal and dramatic elements of game play
  - Need to be in balance with one another and the player
  - Game fails if they are not, no fun
- A **balanced** game is one where success of the player is largely determined by the skill of the player

How to balance?

- Combinatorial game theory
  - Optimisation problem
  - Just because a result is mathematically correct does not mean it is aesthetically pleasing
- Trial and error
  - Play, tweak, play, tweak…
  - Run out of time, release game
  - Tweak further by releasing additional patches
- Need to understand what we're balancing and how


Player A
Player B
Winner
Rock
Rock
Tie
Paper
B
Scissors
A
Paper
Rock
A
Paper
Tie
Scissors
B
Scissors
Rock
B
Paper
A
Scissors
Tie



Birthday Conundrum

	Birthday	Not Birthday
Buy Flowers	10	20
Do not buy flowers	-100	0

Dominant Strategies

- Always buy flowers
  - Always get positive payoff
- Don't buy flowers
  - Zero payoff
  - Massive loss
- Strongly dominant strategy
  - Guarantees winning every time
- Weakly dominant strategy
  - Guarantees not losing, but drawing

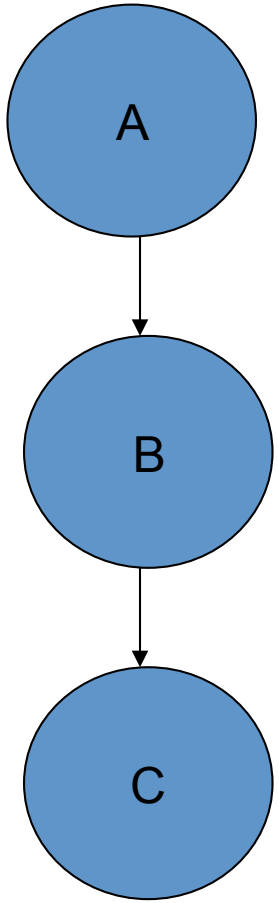

Attacking
25048
Selected across screen.
Apocalypse Tank

Balancing Techniques - Symmetry

- Each player (including the computer) is given the same starting conditions and abilities
- Most applicable to…
  - Sports simulations
  - Multi-player games
- Difficult to achieve precisely
- Leads to boring game play

Transitive Relationships

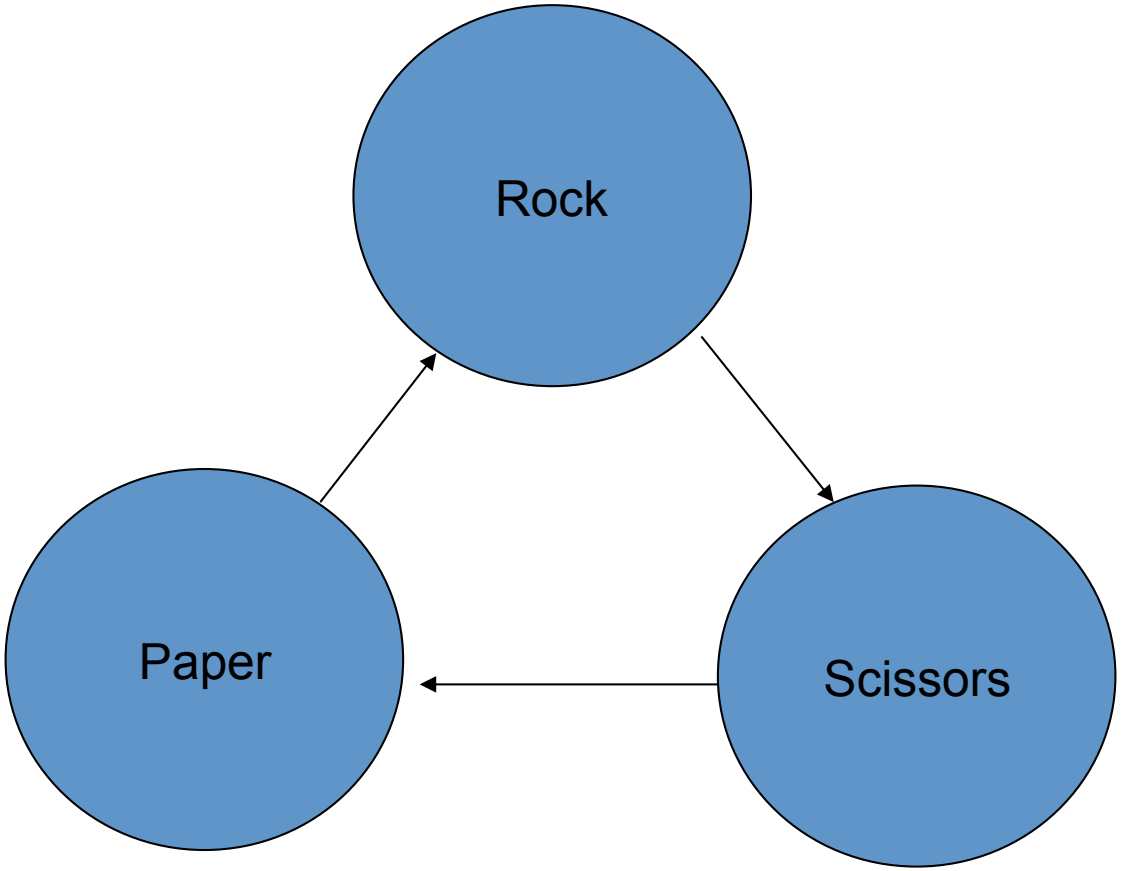
- A one-way relationship between objects
- A beats B, B beats C, C beats nothing at all
- Why would anyone want C?
- Make C **free**, and A **cost** something
- Reward without cost leads to a dominant strategy



Transitive Relationships

	A	B	C
A	0	1	1
B	-1	0	1
C	-1	0	0

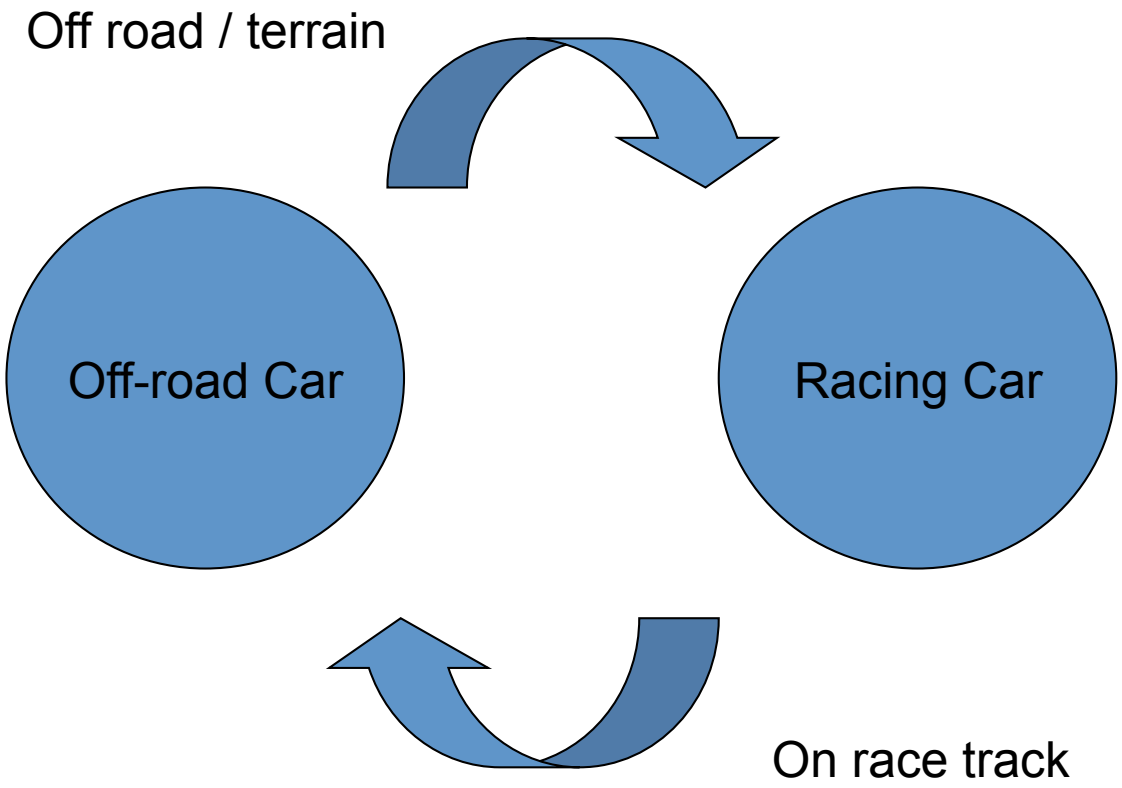
Intransitive Relationships



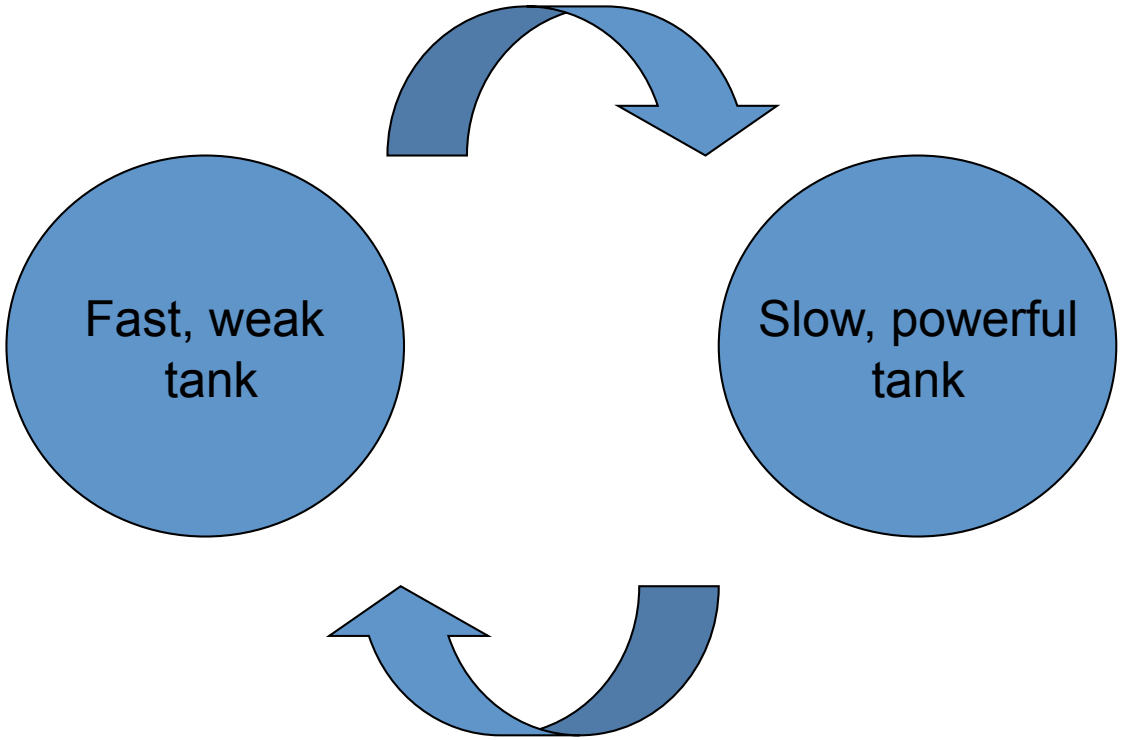
Intransitive Relationships

	Scissors	Paper	Rock
Scissors	0	1	-1
Paper	-1	0	1
Rock	1	-1	0

Intransitive Relationships



Trade-Offs



Feedback

- Positive Feedback
  - Destabilises the game
  - Rewards the winner
  - Ends the game
  - Magnifies early successes
- Negative Feedback
  - Stabilises the game
  - Forgives the loser
  - Prolongs the game
  - Magnifies late successes

Tools for Balancing

- Design for Modification
  - Implement core rules
  - Configure rules with parameters
  - Store parameters in a modifiable form
  - Modify one parameter at a time, test game play
- Prototype well in advance
- Device pay-off matrices
  - Look for dominant strategies