

Working with Formal Elements

Videogame Design and Programming

formal elements form the structure of a game

this lecture reviews how formal elements are used in other games to help/inspire the design of new ones

Players



games are experiences designed for player

a game designers does not care about games

games are a mean to an end

game designers only care about the experience that the game enables

- **Freedom to explore**
 - Players should be allowed to explore a lot
- **Freedom to fail**
 - Players fail all the time in a game
 - Failure has to present in game
 - Bad games don't know how to treat failure
- **Freedom of identity play**
 - Players love to be to be in someone else's shoes
 - I like to play Skywalker but also as Darth Vader or dress as a doll
- **Freedom to effort**
 - Players should be able to play as they feel, soft or hard
 - Sniper vs Assault vs Support vs Engineer



- Games are experiences designed for players who voluntarily accept the rules and constraints of the game in order to play
- Players perform actions that would never consider otherwise (kill) that would like to think to be capable and have never had the chance to face

1

The Lens of Essential Experience



Illustration by Zachary Coe



To use this lens, stop thinking about your game, and start thinking about the experience of the player. Ask yourself these questions:

- What experience do I want the player to have?
- What is essential to the experience?
- How can my game capture that essence?



16

The Lens of The Player

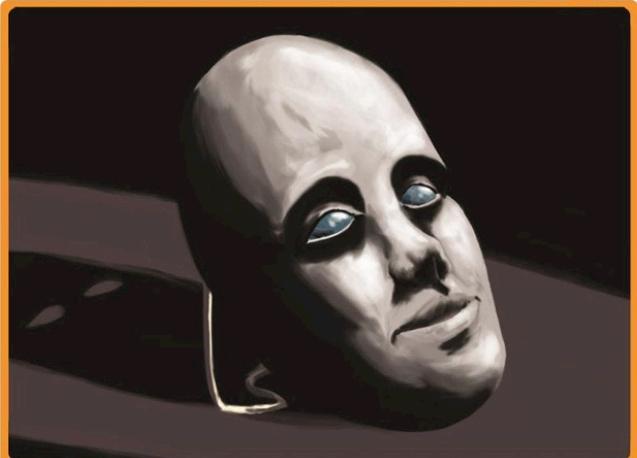


Illustration by Nick Daniels



To use this lens, stop thinking about your game,
and start thinking about your player.
Ask yourself these questions about the people
who will play your game:

- *In general, what do they like?*
- *What don't they like? Why?*
- *What do they expect to see in a game?*
- *If I were in their place, what would I want to see in a game?*
- *What will they like or dislike about my game in particular?*



- Other arts create their own temporary worlds with a ritualized and recognizable moments of entry (a play in a theater, a concert, etc.)
- In board and card games, the invitation is part of a social makeup of the game
- In videogames, the process is usually much more technical
- Some games make an extra effort to extend a more visceral invitation (Guitar Hero)
- Invitations must be engaging to get players interested in playing your game

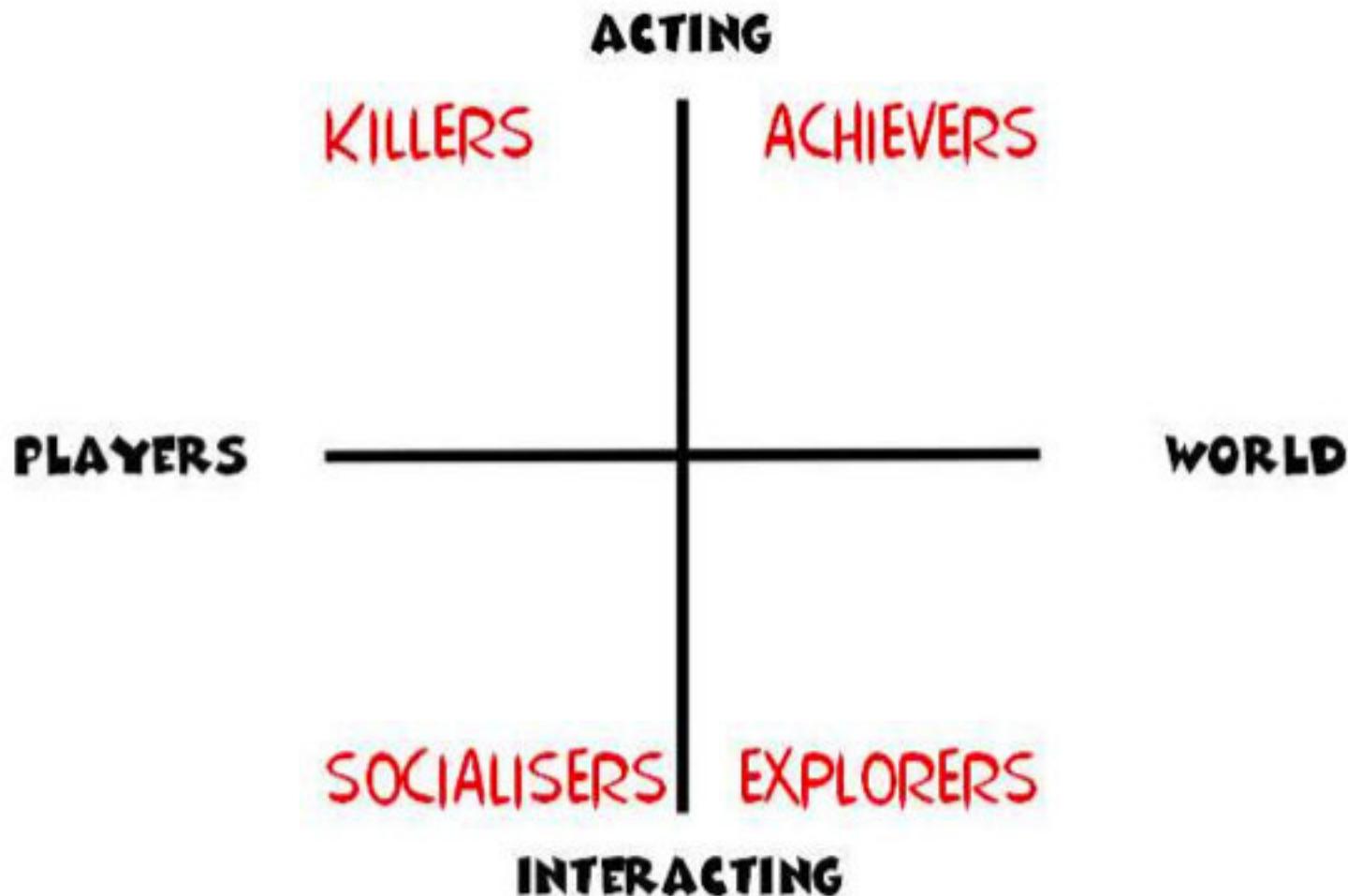


- A game designed for one player is essentially different from a game designed for two, four or 10000 players
- A game designed for a specific number of players has different considerations than a game designed for a variable number of players
- Examples: Monopoly supports 2-8 players
massively multiplayer games supports 10s to 1000s
- Most games have uniform roles for players, but some have more than one role (mastermind or WoW)
- In games allowing different roles for players (or the definition of new roles), the nature and balance of these roles require careful consideration



- Many digital games are “single player versus game” or, more recently, fall into the category “multilateral competition”
- There is however a lot of potential in other patterns that is rarely exploited
- Interaction patterns
 - Single player vs game
 - Multiple individual players vs game
 - Player vs player
 - Unilateral competition
 - Multilateral competition
 - Cooperative play
 - Team competition

PLAYER TYPES





Killers

Defined by:

A focus on winning, rank, and direct peer-to-peer competition.

Engaged by:

Leaderboards, Ranks



Socialites

Defined by:

A focus on socializing and a drive to develop a network of friends and contacts.

Engaged by:

Newsfeeds, Friends Lists, Chat



Achievers

Defined by:

A focus on attaining status and achieving preset goals quickly and/or completely.

Engaged by:

Achievements



Explorers

Defined by:

A focus on exploring and a drive to discover the unknown.

Engaged by:

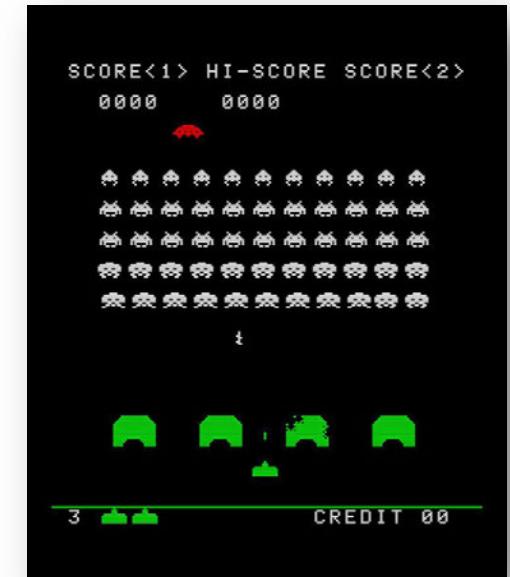
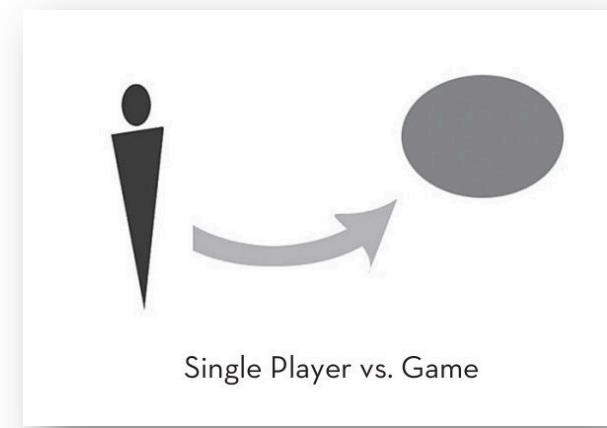
Obfuscated Achievements

GAMIFICATION PLAYER TYPES: MEET THE PLAYERS (I)

	WHAT THEY LOOK FOR	MECHANICS	AESTHETICS	STORY
ENJOYER	Positive emotions & pleasure: joy, curiosity, inspiration, surprise, mystery, awe	Tutorials, beginner's luck, unexpected gifts, prizes, boosters, quick success	Limited HUDs, Juicy and fresh UIs, Mystery stuff	Iceberg stories
FARMER	Extrinsic motivation on achievement: collecting, achieving and completing	Badges, trophies, achievements, virtual goods, scarcity, progress bar, levels, challenges	Plenty of HUDs, easy to see achievements, player to player interfaces, progress stats	Epic-oriented stories
SELF-SEEKER	Extrinsic motivation on meaning: status, influence and acceptance	Vanity items, Guilds, leaderboards, status points, duels, customization, elitism	Vanity graphics, guild recognition, ranking stats, elitism customization and changing environment	Status-oriented stories
NETWORKER	Extrinsic motivation on relatedness: contacts, opportunities and privileges	Privileges, networks, chat rooms, inviting friends, master-mentor, special communities, social graph	Social stats and HUDs, public information and UI, avatars and personal info display	Social-oriented stories

player interaction patterns

- Most common pattern for digital games
- Might use puzzle or other structures to create conflict
- Multiplayer used to define more players are involved, but (general) games are usually multiplayer



- More players compete against a game
- Actions are not directed toward each other, and no interactions between participants is required
- Examples include bingo, roulette, Farmville
- Works well for non cooperative players who enjoy games and the social arena (for instance casino games)

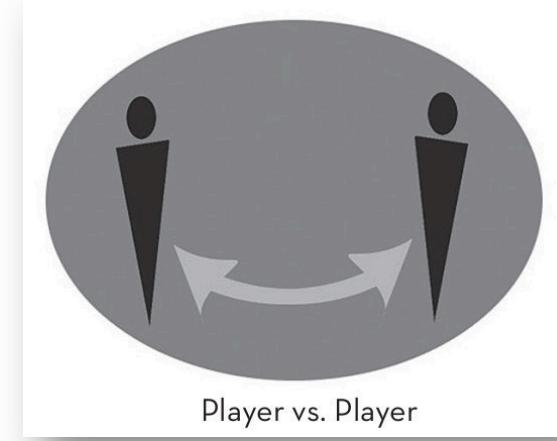


Multiple Individual Players vs. Game





- Two players directly compete (chess, checkers, tennis, etc.)
- A classic structure for strategy games and works well for competitive players
- Two players fighting game employ this structure (Mortal Kombat)
- Intense competition marks this pattern for focused head to head play



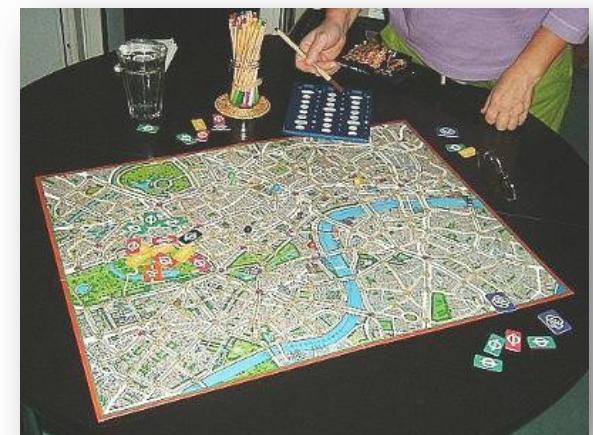
Player vs. Player



- Two or more players compete against one player
- Highly undervalued but interesting structure that combines cooperative and competitive game play
- Scotland Yard board game
 - A group of players (the detectives) try to catch the singled out player (the criminal)
 - The criminal has full information about the game state
 - The detectives work together to deduce the state from clues left by the criminal



Unilateral Competition

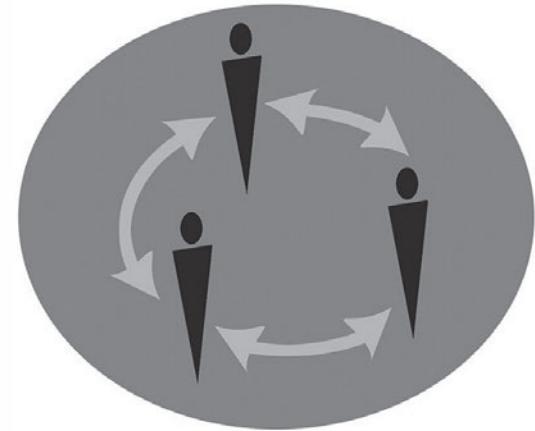




Evolve

<https://www.youtube.com/watch?v=kIHTGJcvTUk>

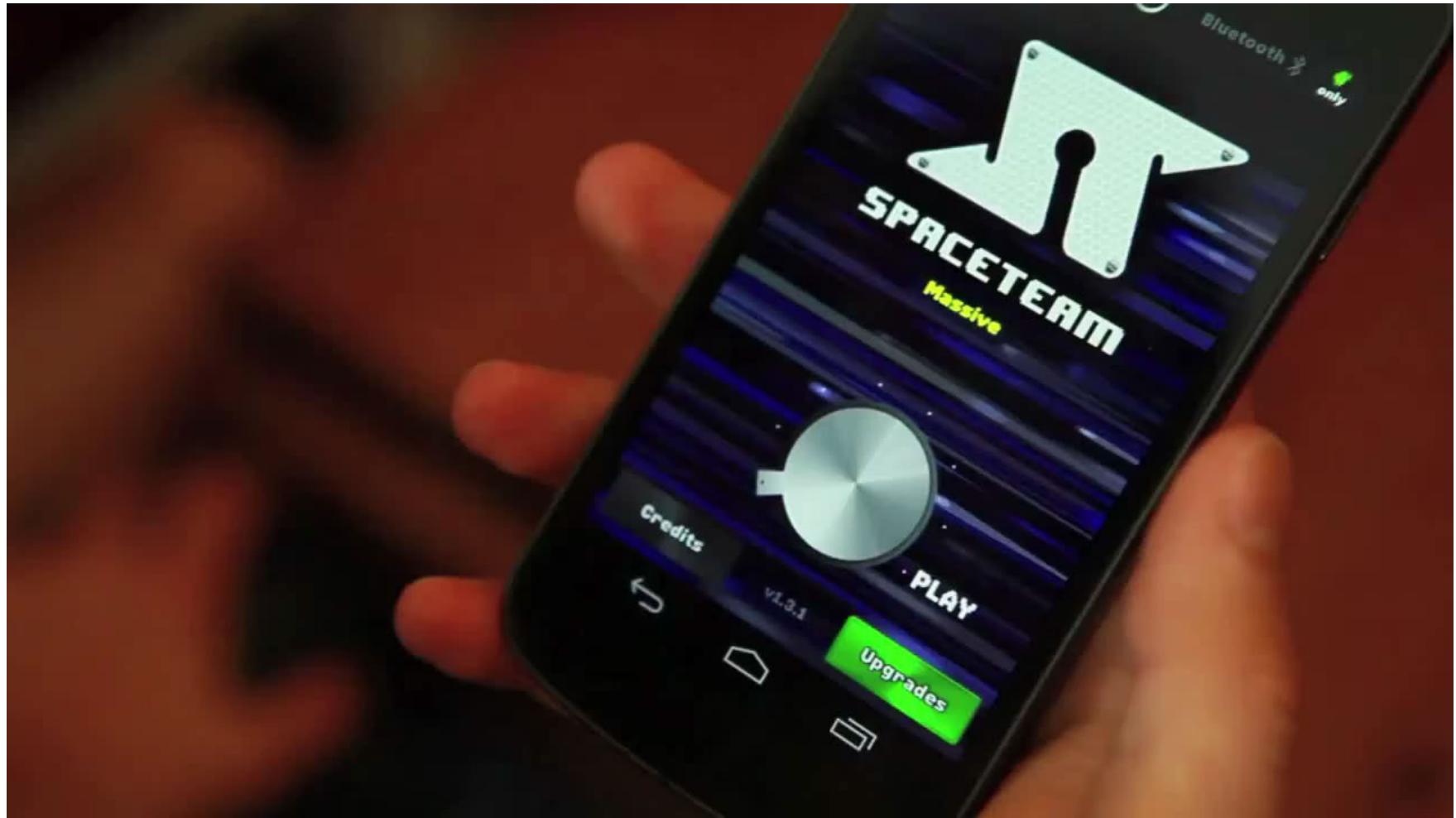
- Three or more players directly compete
- When most of the players think of “multiplayer” they are referring to this interaction pattern
- Currently, the trend is to identify “multiplayer” with “massive number of players”, there is however plenty of room for innovative thinking in terms of smaller directly competitive groups
- Board games with this pattern have tuned for generation for groups ranging between three to six players
- Multiplayer digital game that encourages the same high level of social interaction that occurs with 3-6 person board game?



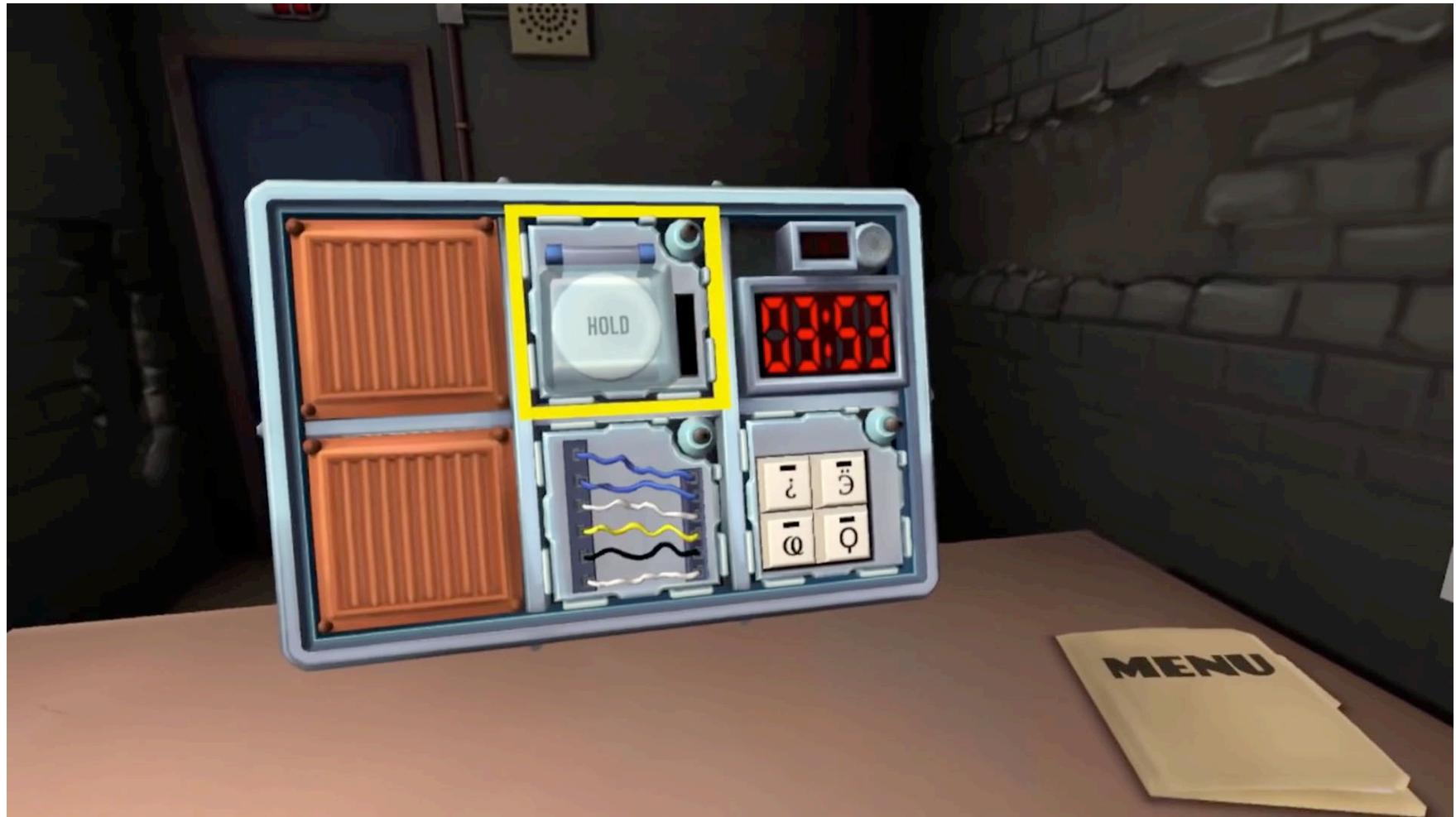
Multilateral Competition

- Two or more players cooperate against the system
 - Lord of the Rings board game
 - Cooperative quests in WoW
 - Portal 2 cooperative campaign
 - Left for Dead 2
 - Journey

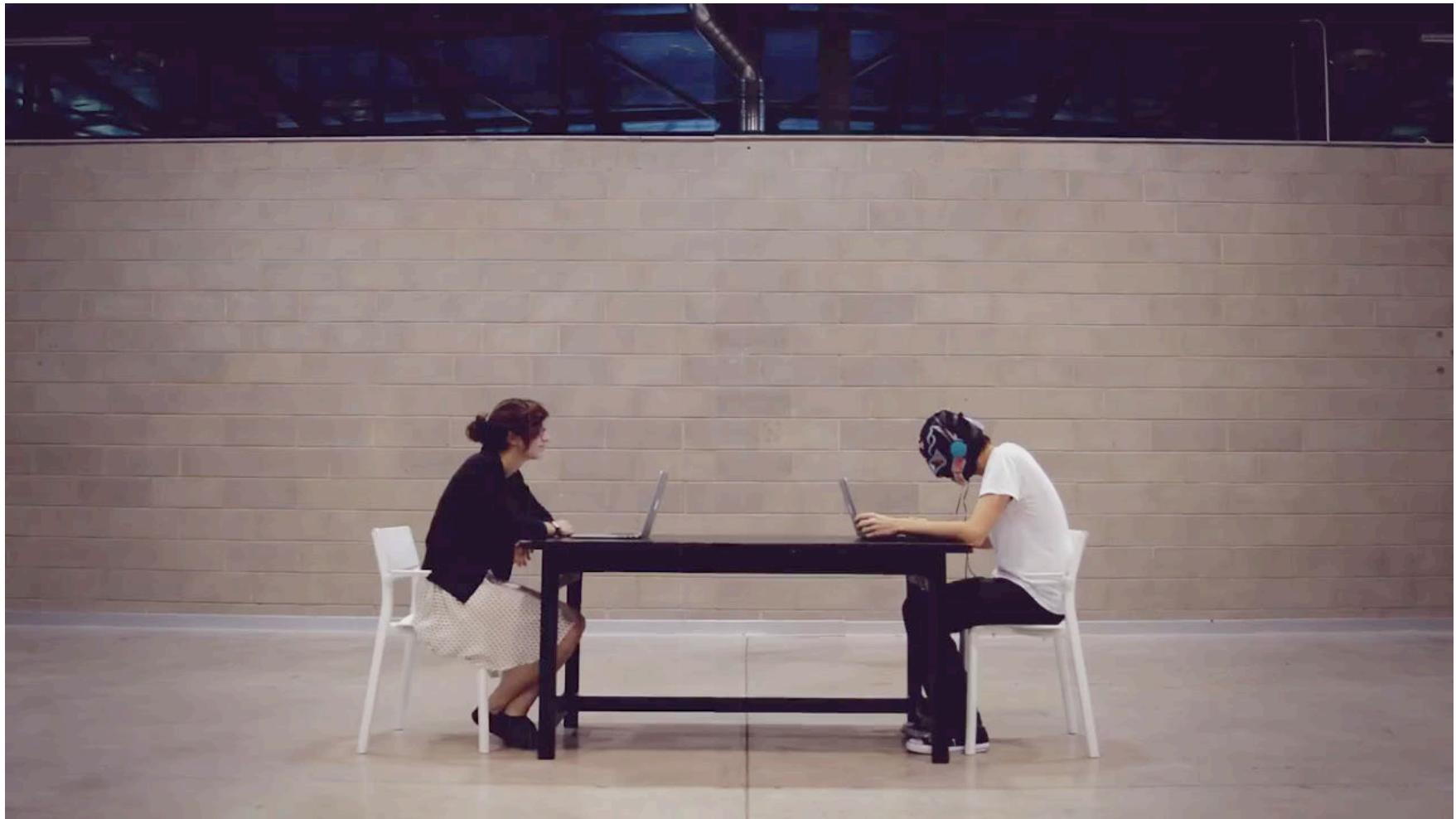




Space Team
<http://www.youtube.com/watch?v=aBfHhfxLNPE>

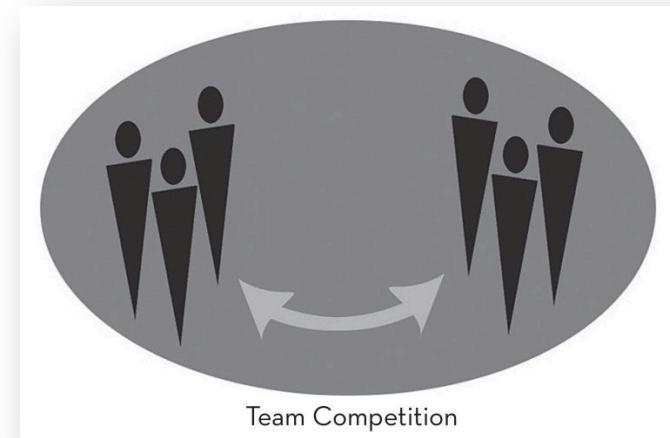


Keep Talking and Nobody Explodes
<http://www.keeptalkinggame.com>



We'll Meet Again (We are Muesli)
<http://wearemuesli.itch.io/wma>

- This is a game structure in which two or more groups compete (soccer, Battlefield 1942, Tribes, etc.)
- Clans or guilds immediately sprang out in massively multiplayer games as if responding to the need for this particular pattern



Objectives



- Define what the players are trying to accomplish within the rules of the game and give the player something to strive for
- They should seem challenging, but achievable, to the players
- Different players might have different objectives (Risk)
- There might be partial objectives, miniobjectives, etc.
- Set the tone of the game (kill enemies vs becoming rich)
- The game objective should be carefully considered because it affects not only the formal system but also the dramatic aspects

- What are some objectives of games you have played?
- What impact do these objectives have on the game tone?
- Do certain genres of play lend themselves to certain objectives?
- What about multiple objectives?
- Do objectives have to be explicit?
- What about player-determined objectives?

Capture

Take or destroy something of the opponent (terrain, units, etc.)



WarCraft III Gameplay
<http://www.youtube.com/watch?v=TFVP8pVGYsQ>

Chase

Catch an opponent or elude one. Can be determined by speed, dexterity, stealth, strategy



Maximum Chase
<http://www.youtube.com/watch?v=jhHdIqJ6zGc>

Race

Reach a goal, physical or conceptual, before the other players.



www.gpgames.eu

FI 2010

<http://www.youtube.com/watch?v=fDNMuGEZI6I>

Alignment

Arrange your game pieces in a certain spatial configuration or
create conceptual alignment between categories of pieces



Rescue or Escape

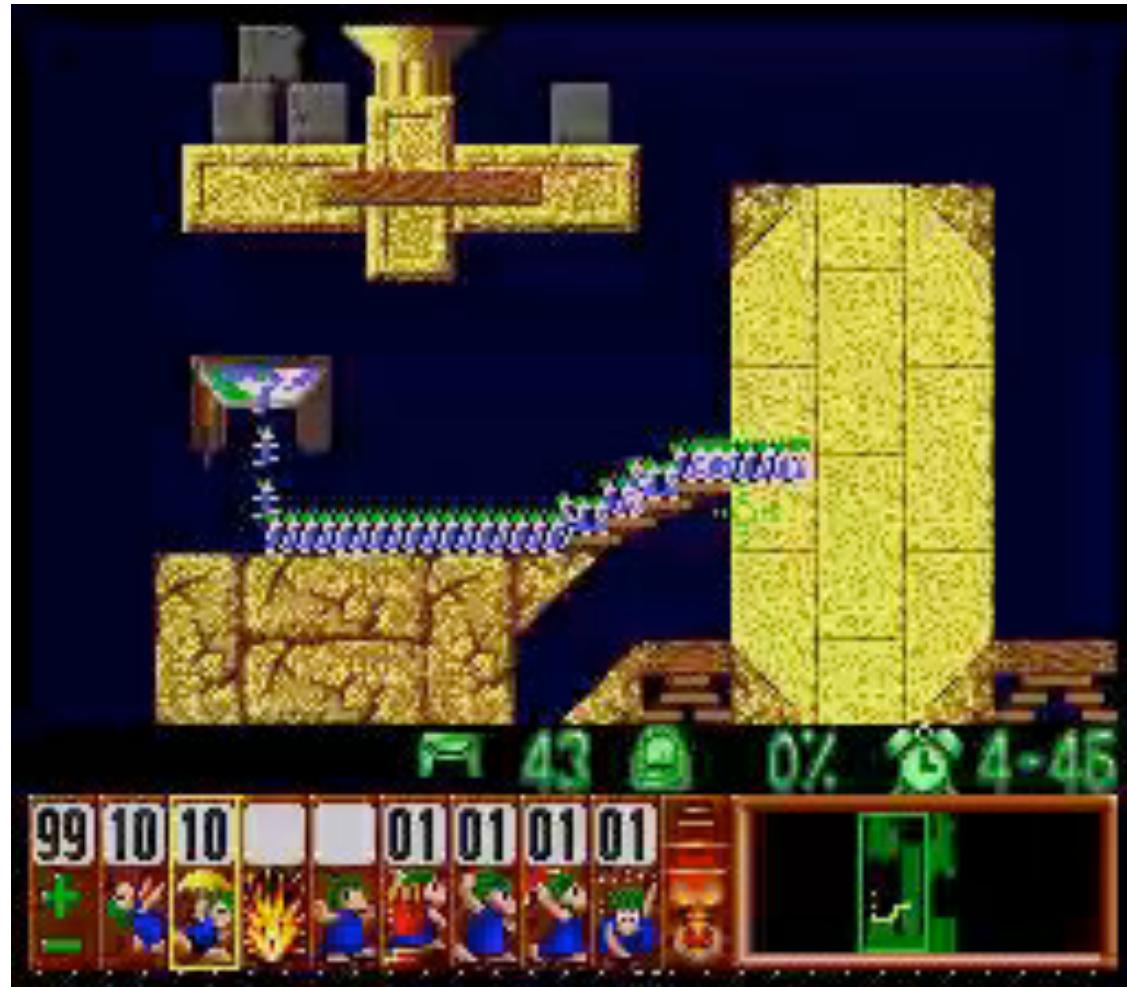
Get a defined unit or units to safety

(Super Mario Bros. , Prince of Persia, Emergency Rescue)



Prince of Persia

http://www.youtube.com/watch?v=_zyQ_OVyhNE



A 43 B 0% C 4-45

99	10	10		01	01	01	01			
+/-	M	B		M	B	M	B			

Forbidden Act

Get the competition to break the rules for instance, by laughing, talking, making the wrong move, etc. (Twister, Operation)

Rarely found in digital games probably
because is difficult to monitor fair play



<http://vimeo.com/31946199>

Construction

Build, maintain and manage objects (SimCity, The Sims, etc.)



Sim City

http://www.youtube.com/watch?v=X_5HFvu8O4U

Exploration

The goal is simply to explore areas but it is usually combined with other competitive objectives (treasures, puzzle solving, combat).

Online worlds like Ultima and EverQuest have also used exploration as one of several objectives



The Witness
<http://www.youtube.com/watch?v=i7h7AleSCF4>

The grate is locked.
unlock grate with keys

The grate is now unlocked.
drop keys

OK
enter

You are in a small chamber beneath a 3x3 steel grate to the surface.
A low crawl over cobbles leads inward to the west.

The grate is open.
west

You are crawling over cobbles in a low passage. There is a dim light
at the east end of the passage.

There is a small wicker cage discarded nearby.



Colossal Cave

<http://www.youtube.com/watch?v=Ys8wTNzZsjQ>

Unregistered HyperCam 2

Score: 0

Moves: 0

ZORK I: The Great Underground Empire

Copyright (c) 1981, 1982, 1983 Infocom, Inc. All rights reserved.

ZORK is a registered trademark of Infocom, Inc.

Revision 88 / Serial number 840726

West of House

You are standing in an open field west of a white house, with a boarded front door.

There is a small mailbox here.

>

Zork

<https://www.youtube.com/watch?v=IL4uz2gaOGs>

Solution

Solve a problem or puzzle (graphic adventures, connect four)

GAMEANYONE.COM



Monkey Island

<http://www.youtube.com/watch?v=xKRP3y3jx7A>

Outwit

Gain and use in-game or extra-game knowledge in a way that defeats the other players (Diplomacy vs Trivial Pursuit).

Games requiring the gaining of in-game knowledge provokes interesting social dynamics not yet explored in digital games.

Procedures & Rules



Guitar Hero Warriors of Rock trademark of Activision

- Methods of play and the actions that the players can take to achieve the game objectives
- Who does what, where, when, and how?
- Most games tend to have
 - Starting procedures (how to put the game into play)
 - Progression of action (ongoing procedures after the start)
 - Special actions (available conditional to other elements or game state)
 - Resolving actions (bring game to a close)
- In board games, procedures are usually described in the rule sheet and put into action by the players
- In digital games, procedures are generally integrated into the control section

- Super Mario Bros
 - Select Button: use this button to select the type of game
 - Start Button: press this button to start the game.
If pressed during play, it will pause the game
 - Left Arrow: walk to the left. Push button B at the same time to run
 - Right Arrow: walk to the right. Push button B at the same time to run
 - Down: crouch
- When defining the procedures, it is important to keep in mind the limitations of the environment in which the game will be played
- What type of input/output devices will the setting have
- Will players have a keyboard and a mouse?
- Will they sit close to the screen or far away?

- Define objects and allowable actions by the players
- Most important questions
 - How do players learn the rules? How are rules enforced?
 - What rules work best in certain situations?
 - Are there patterns to rule sets?
- In videogames, they can be explained in the manual or be implicit in the game itself
- Their design must be carried out in relation to the players
 - Too many rules might be difficult to manage and understand
 - Unstated or unclear rules might confuse or alienate players
- Example: in Warcraft, to create a knight a player must have upgraded to a keep and built a stable

- **Rules Defining Objects and Concepts**

- Objects in games have a unique status and meaning that is different from the objects in the real world
- In videogames, objects are made of a fairly complex set of variables that defined their overall state
- Knights and ogres in Warcraft share the same default values of variables: cost (800 gold, 100 lumber), hit points (90), damage (2-12), armor (4), sight (5), speed (15), range (1)
- Will the player have to deal with this complexity directly?

- **Rules Restricting Actions**

- “a player cannot move its king into check”
- “to create a knight, need to upgrade to keep and build a stable”

- **Rules Determining Effects**

- By triggering effects, it is possible to introduce variation in gameplay
- It is also possible to get the gameplay back on track

Exercise

write down the rules of black jack, then try
to play black jack using **only** the rules you wrote

Resources



- In videogames, resources play much the same role as in the real world, they are assets (e.g., natural or economic resources) that can be used to accomplish a goal
- They must have both utility and scarcity in the game system
- How does a designer decide what resources to offer?
- How does a player control access to those resources to maintain challenge in the game?
- Many designers fall into the trap of copying exiting games when it come to resource management
- To break away from the tried and true, try to think about resources in a more abstract sense. Look at the basic functions of resource types and try to apply them in new creative ways

- Lives (the typical resource in arcade games)
- Units (used when the player is represented by more objects)
 - They can be all of one kind
 - Their value can be constant or evolve
 - Determining the cost/unit and the balance of resources can be tricky. Playtesting is one way to do this.
- Health (separate resources or associated to life)
 - How might players raise health levels during the game?
 - Action games use medkits, somewhat unrealistic, but fast
 - Role-playing games use more realistic model, but slow and somewhat frustrating to players

- **Currency**
 - One of the most powerful resource types
 - Plays the same role it does in real life
- **Actions (moves or turns can be considered resources)**
- **Power-ups (classic type of resource)**
- **Inventory (limit the number of objects/resource carried)**
- **Special Terrain (often used in strategy games)**
 - In Warcraft, wood is extracted from special areas
- **Time**
 - Restrict player actions by time or phases
 - In Pac-Man, power-pills give special power for limited time

www.fraps.com



Jagged Alliance
<http://www.youtube.com/watch?v=I2cDuXieY0E>

Conflict & Outcome

A celebratory scene from a soccer game. In the center, a player wearing a green jersey with the number 1 and a yellow captain's armband is holding up a golden trophy. He is surrounded by other players in red jerseys, some with their arms raised in triumph. The background is filled with confetti and stadium lights, creating a festive atmosphere.

Emirates

FIFA2010 is a trademark of EA Sports

- Conflict emerges from the players trying to accomplish the goals of the game within its rules and boundaries
- It is designed into the game by creating rules, procedures and situations that do not allow players to accomplish their goal directly
- In Quake, the conflict arises from staying alive while player or non-player opponents try to kill you
- Three classic sources of conflict in games are:
 - Obstacles
 - Opponents
 - Dilemmas (spend money to buy a property or use the money to upgrade a property)

- **Boundaries**
 - Boundaries separate the game from everything that is not the game
 - For instance, ten people playing in a room two people watching they are outside the magic circle (the boundaries)
 - Alternative reality games (ARGs) combine real-world and online interaction to create their gameplay
 - “I love bees” an ARG to promote the release of Halo2
 - An interesting design exercise would be to take a familiar game and change its boundaries to see how it affects the play experience
- **Outcome**
 - Outcome must be uncertain to hold the attention of the player
 - Many online worlds don't have the concept of a winner or even an end state but reward the player in other fashions (e.g., FarmVille)
 - Other have a certain outcome but define a completely different type of challenge (e.g., Space is King)

- **Exercise #1**
 - Reconsider some of the games you played in terms of formal elements, try to describe them in terms of such elements
- **Exercise #2**
 - Reconsider one game you played (one that many know ☺) and change the role of one of the formal elements to modify the gameplay
- **Exercise #3**
 - Develop a concept for a game that only uses few cubes as objects/characters/opponents/etc.