Defining Game Mechanics

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About me

Fawzi Mesmar

- A passionate game designer with over **13 years of experience** in the industry, During his career Fawzi has shipped **over 20 games** (PC, Xbox360, XBLA, GBA, Facebook, iOS and Android), many of them went to become big successes worldwide in many game development companies such as King, enish, Gameloft, and Atlus to name a few. Recent releases include: Candy Crush Jelly Saga, Mira Mira, Ice Age Adventures, My little pony Friendship is magic, and Persona 3 Social all **multimillion** player hits.

- Currently Fawzi is the Berlin Studio Game Design Director at King

The definition of Game Mechanics

An overview

GAME MECHANICS ARE THE CORE OF WHAT A GAME IS. THEY ARE INTERACTIONS AND RELATIONSHIPS THAT REMAIN WHEN ALL THE AESTHETICS, TECHNOLOGY, AND STORY ARE STRIPPED AWAY

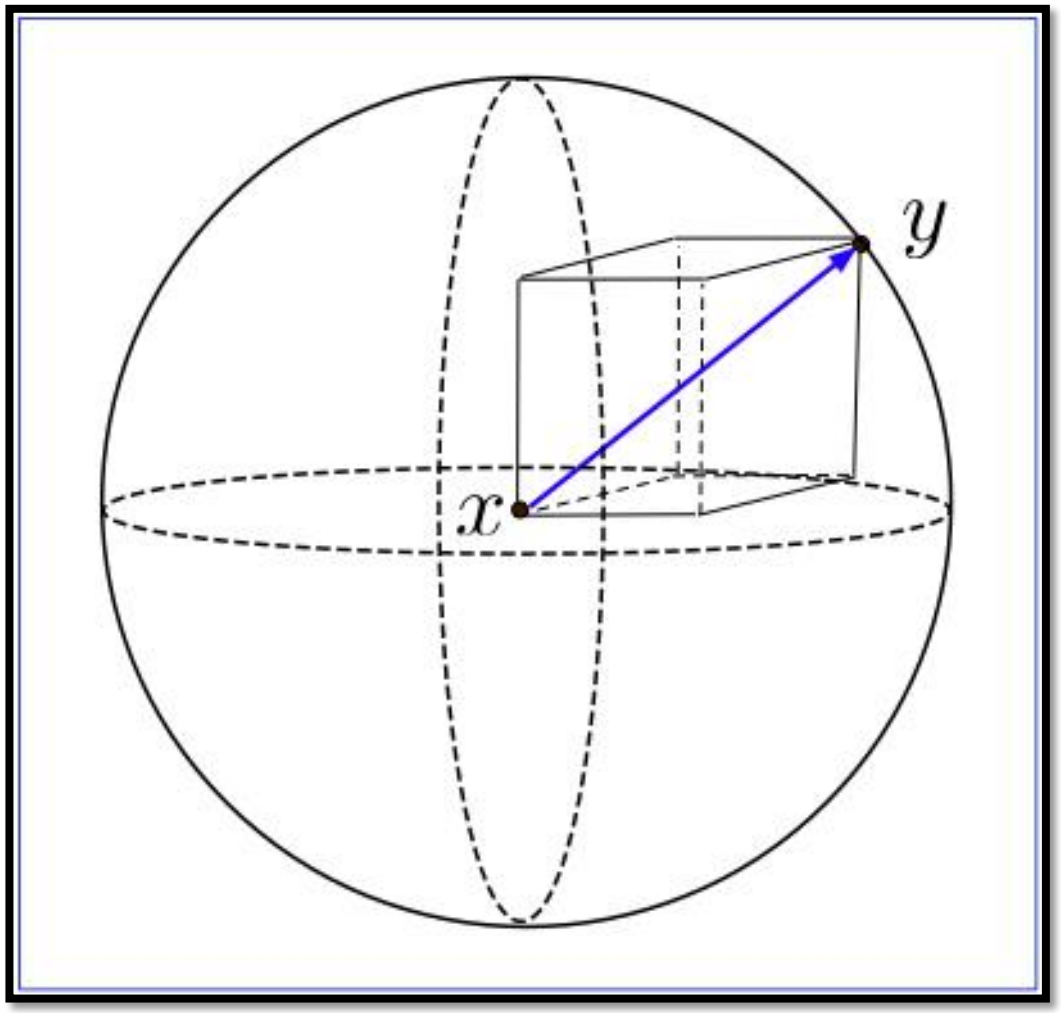
Game mechanics can be broken down to:

- Space
- Objects, attributes and states
- Actions
- Rules
- Skill

Space

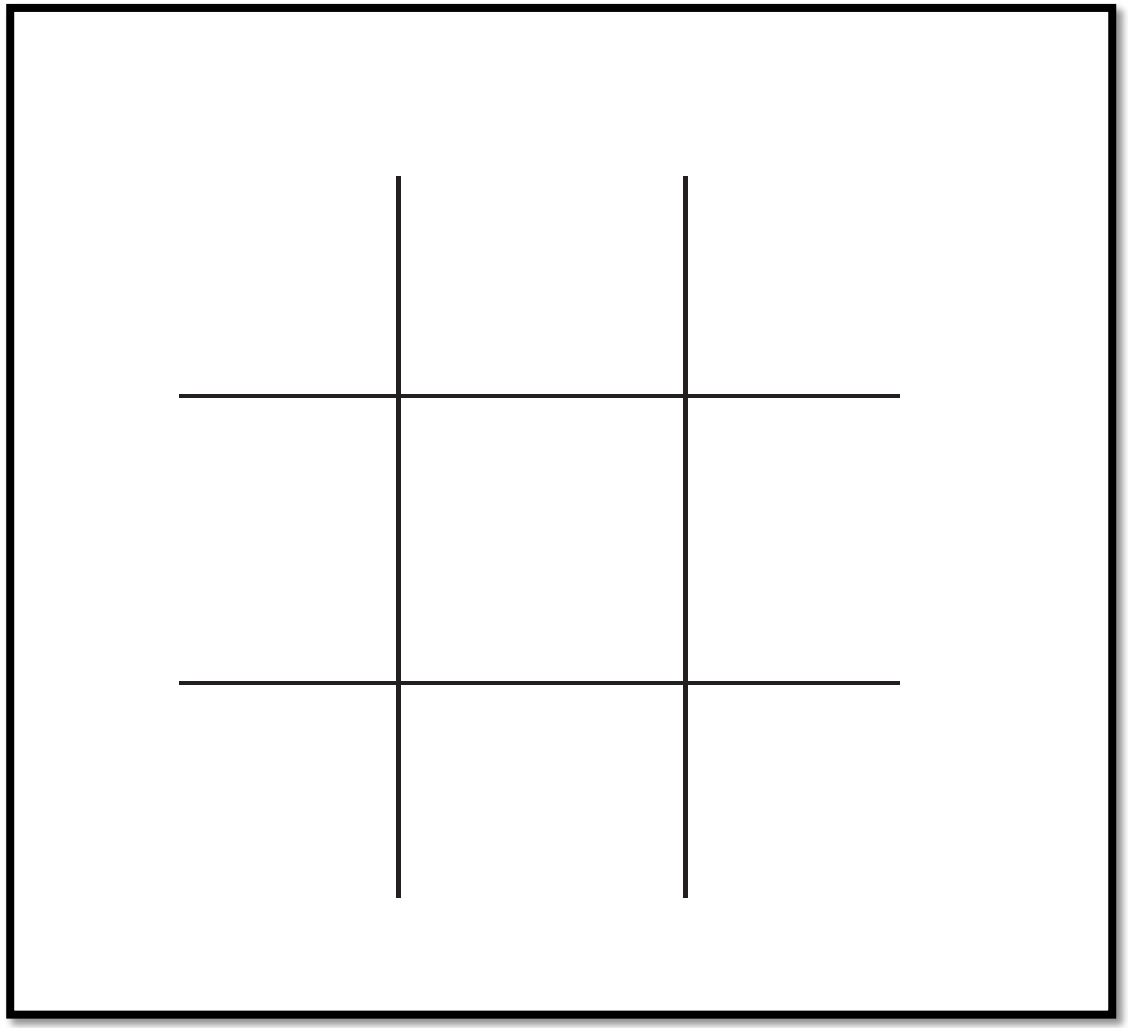
- DEFINITION

As a game mechanic, space is a mathematical construct in abstraction. It defines the various places that can exist in a game and how those places are related to one another.



Spaces can be described as:

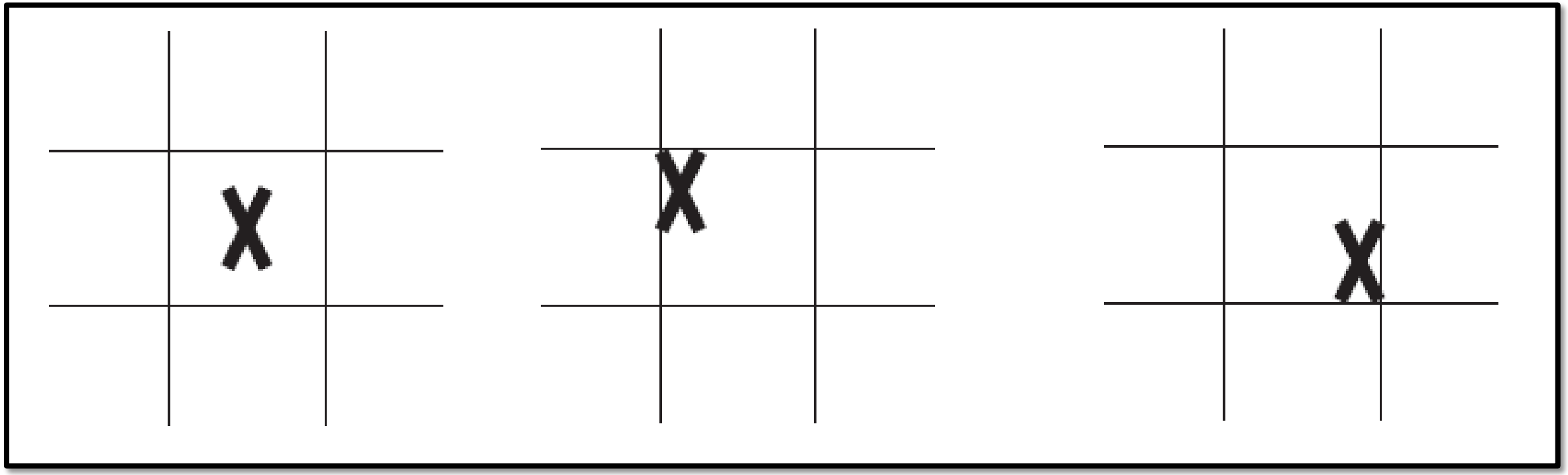
- Discrete or continuous
- Have some number of dimensions (zero, one dimensional, 2D and 3D)
- Have bounded areas which may or may not be connected

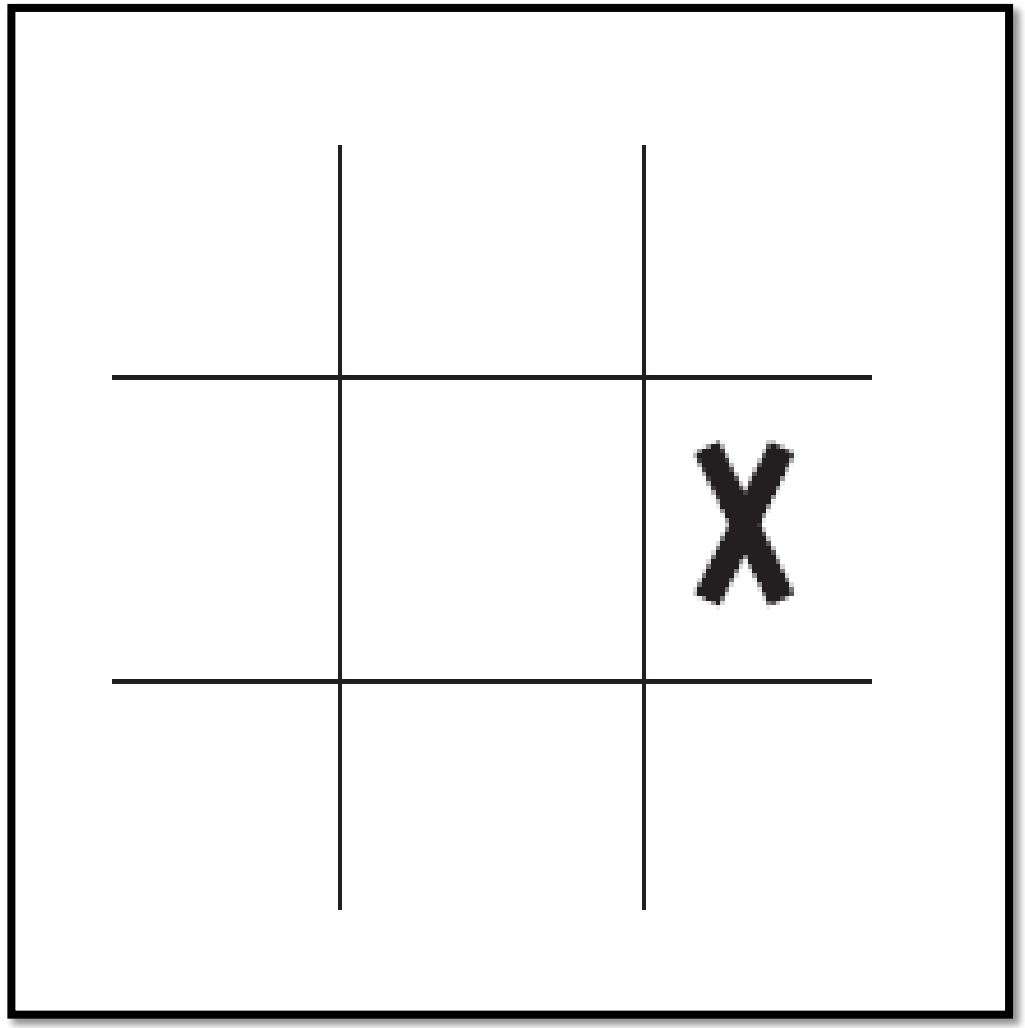


Example

- Describing the space of the game of Tic Tac Toe

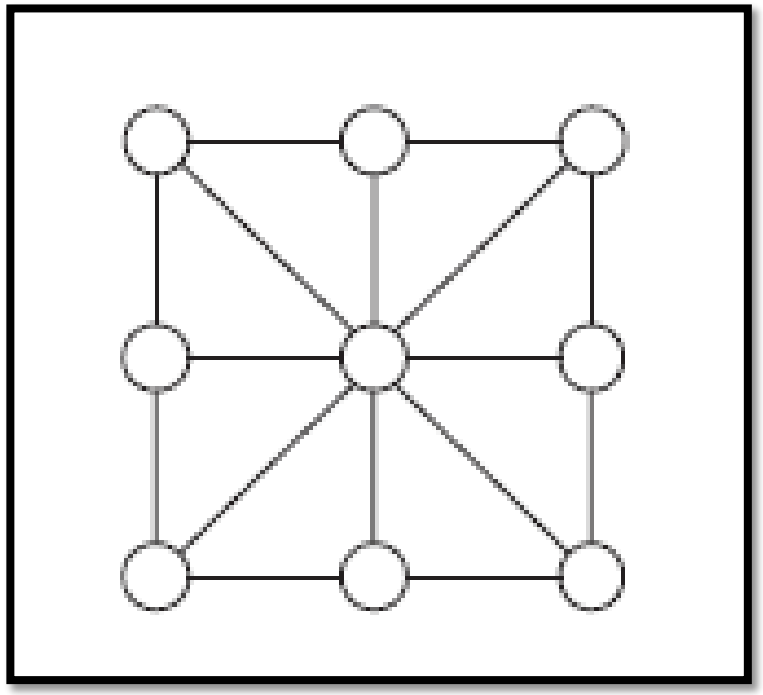
Tic-Tac-Toe





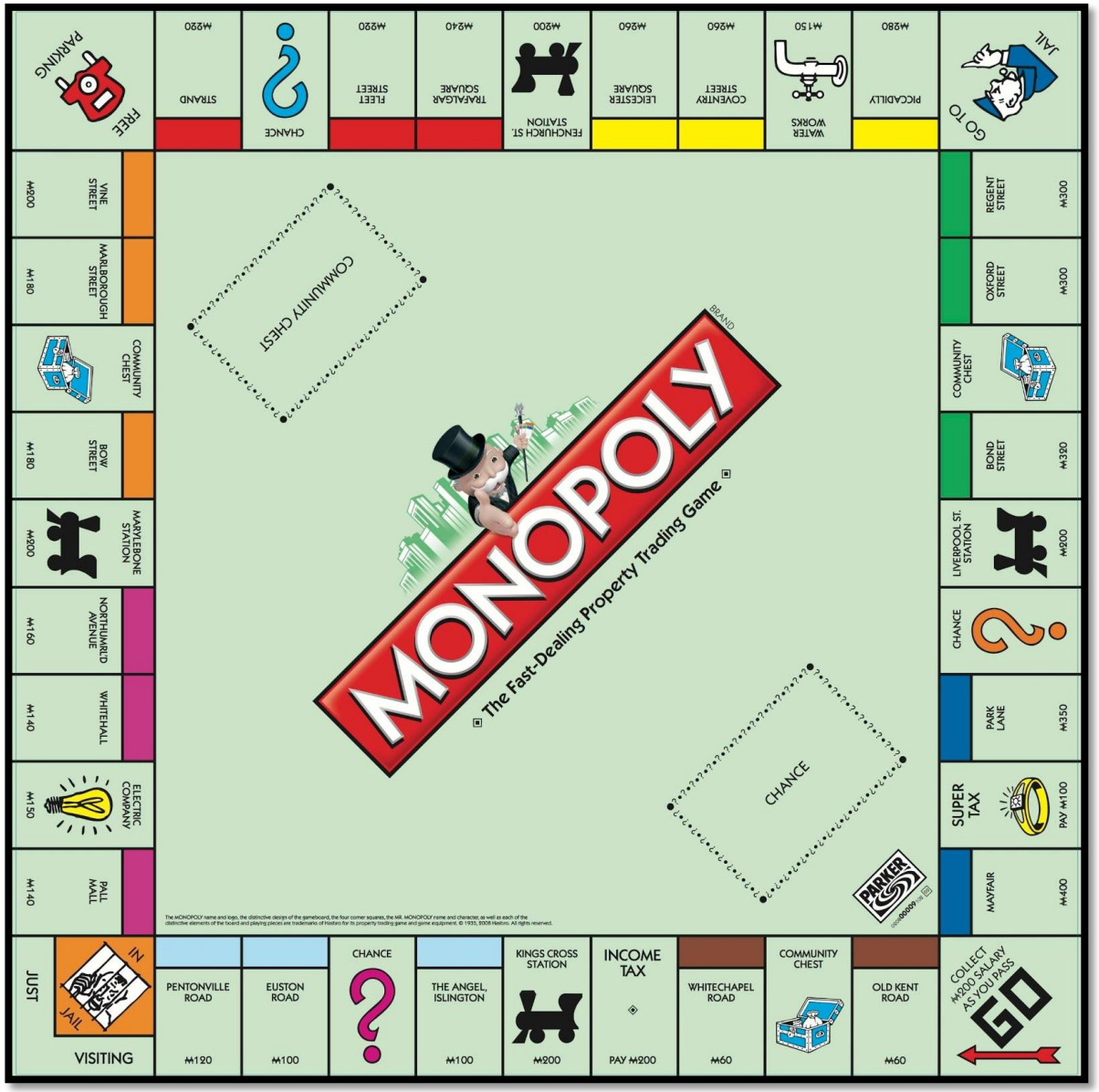
Discrete spaces

- Object placement now carries a meaning



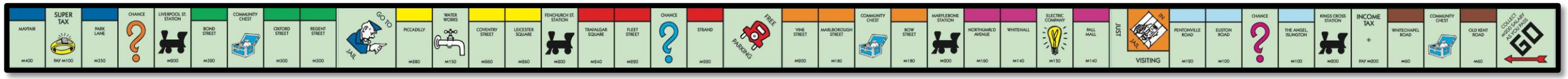
Discrete spaces

- Circles represent Zero dimensional spaces
- Lines represent how these spaces are connected
- What is important? Adjacency or movement?



Example

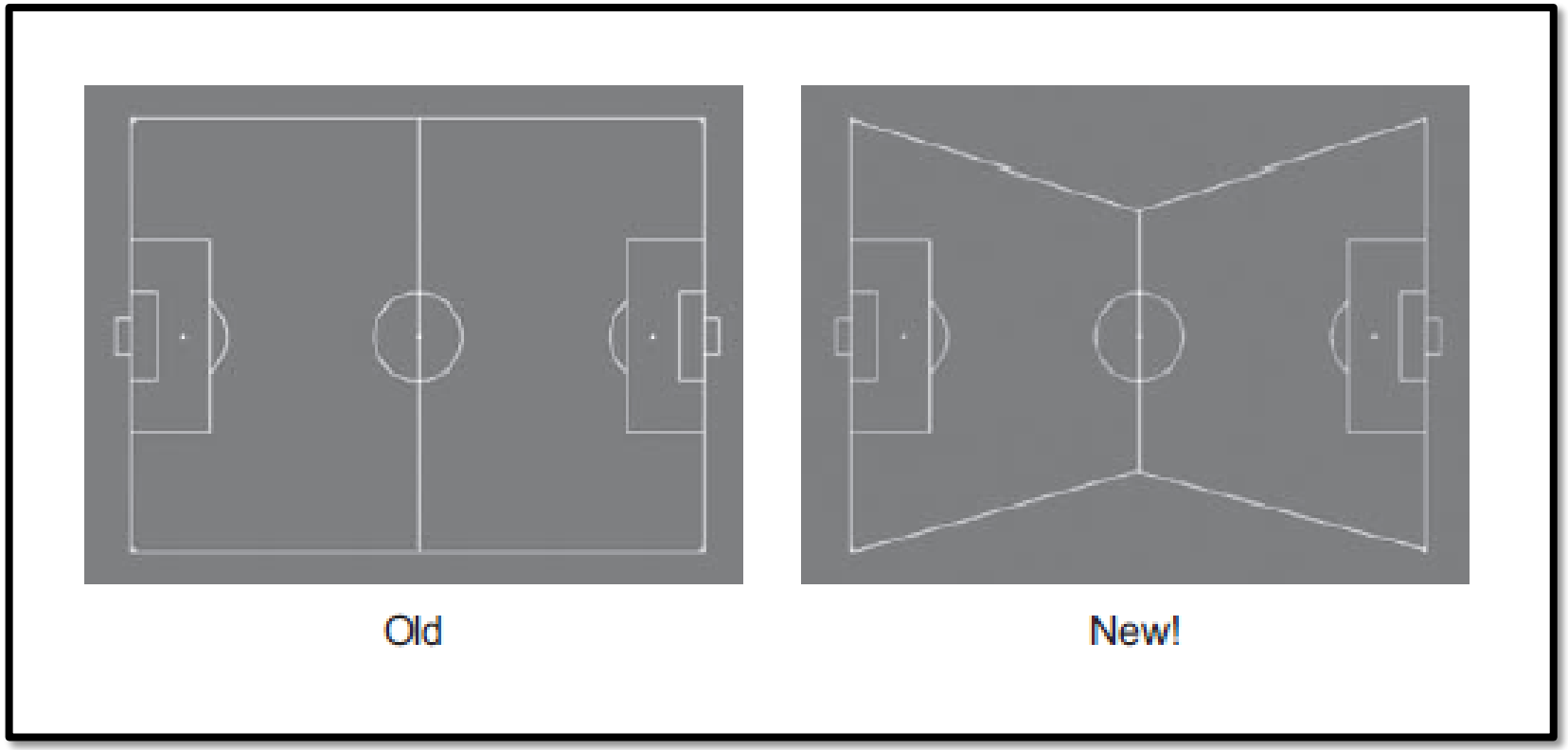
- Describing the space of the game of Monopoly



A Monopoly board can be presented as a one dimensional space.

It is in essence a single line of 40 discrete points which connects to itself in a loop

Continuous Spaces



Continuous Spaces

- Examples of 2 dimensional and 3 dimensional game spaces

Nested Spaces

- Some games apply a lot of different types of game spaces to convey different ideas and emotions to the player and a sense of a larger world.

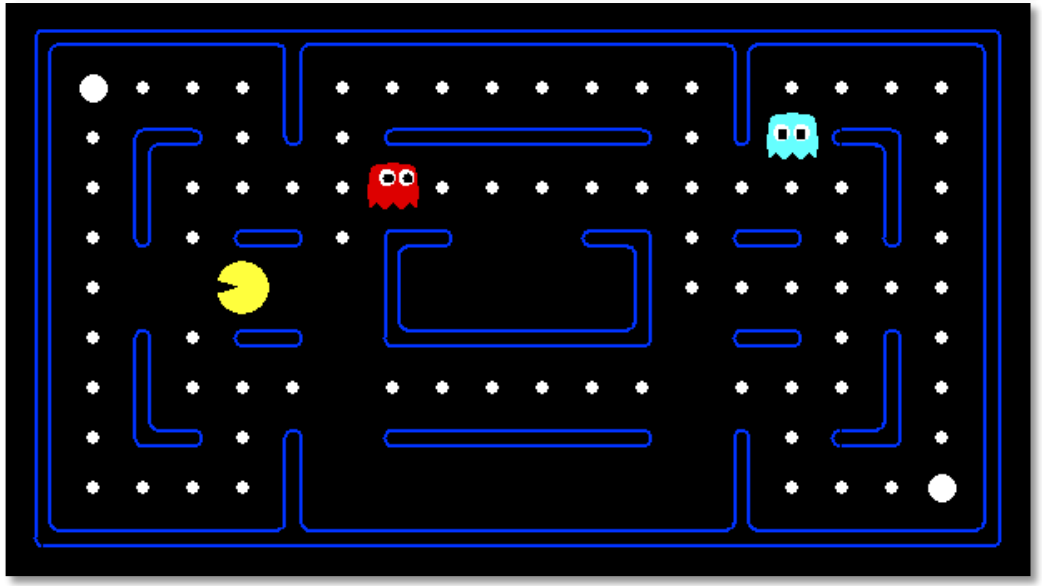
Zero Dimensional Spaces

Why bother thinking of spaces?

- USE THOSE PURE ABSTRACT TERMS HELPS YOU LET GO OF THE ASSUMPTIONS ABOUT THE REAL WORLD

And that enables you to focus on the kinds of gameplay interactions you would like to see in your game.

Objects, attributes and states



Objects & attributes

They are characters, props, tokens, scoreboards, anything that can be seen, heard, interacted with or manipulated in your game space

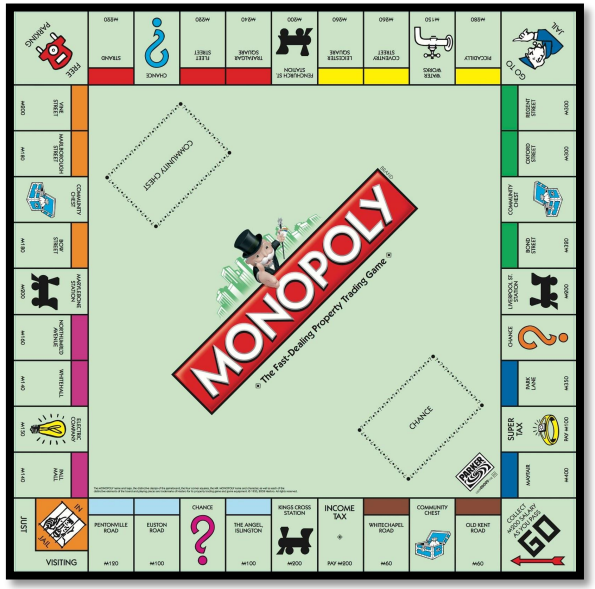
Objects Generally Have one more attributes, one of which is often the current position in the game space

Attributes are categories of information about an object

Each attribute has a current state

Static attributes never change states

- DYNAMIC ATTRIBUTES HAS A FINITE SET OF POSSIBLE STATES

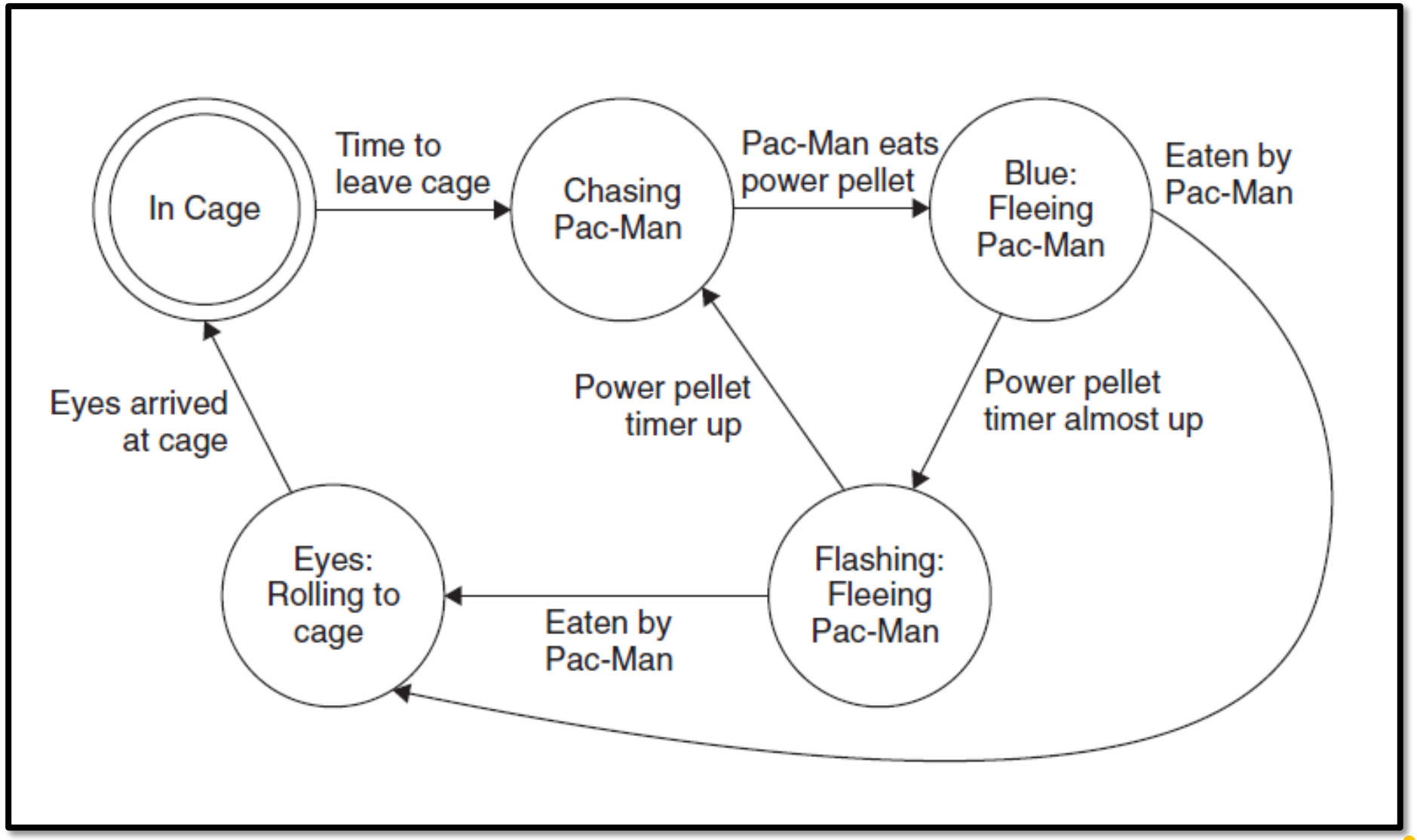


Examples

-In Chess, the king has a “movement mode” attribute with three important states (“Free to move”, “in check”, and “checkmated”)

-In Monopoly, each property on the board can be considered an object with a “number of houses” attribute that has six states (0,1,2,3,4,Hotel) and a “mortgaged” attribute with two states (“yes”, “no”)

State Diagram



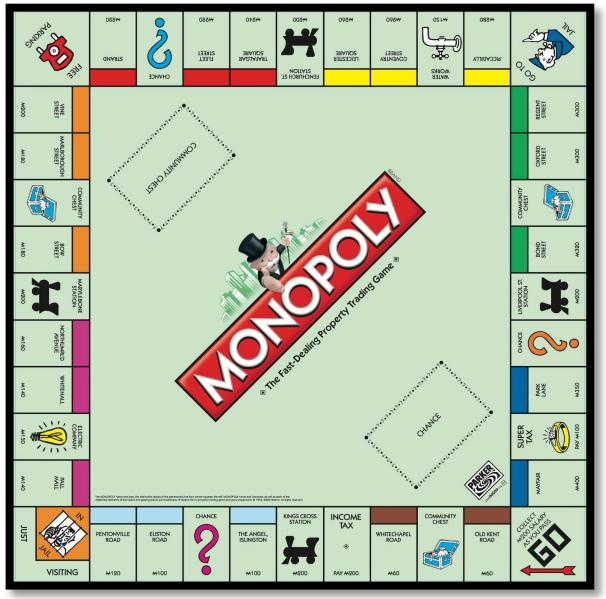
Exercise

- Ringing phone state machine

Public vs. private states

- ITS IMPORTANT TO MAKE DECISIONS ABOUT WHO IS AWARE OF WHICH ONES

Games that force the player to be aware of too many states (too many game pieces, too many statistics for each character) to play can confuse and overwhelm. Good design practise is to optimize the information that is shared



examples

Chess, Monopoly, card games

Can you think of any?

The game is cheating!

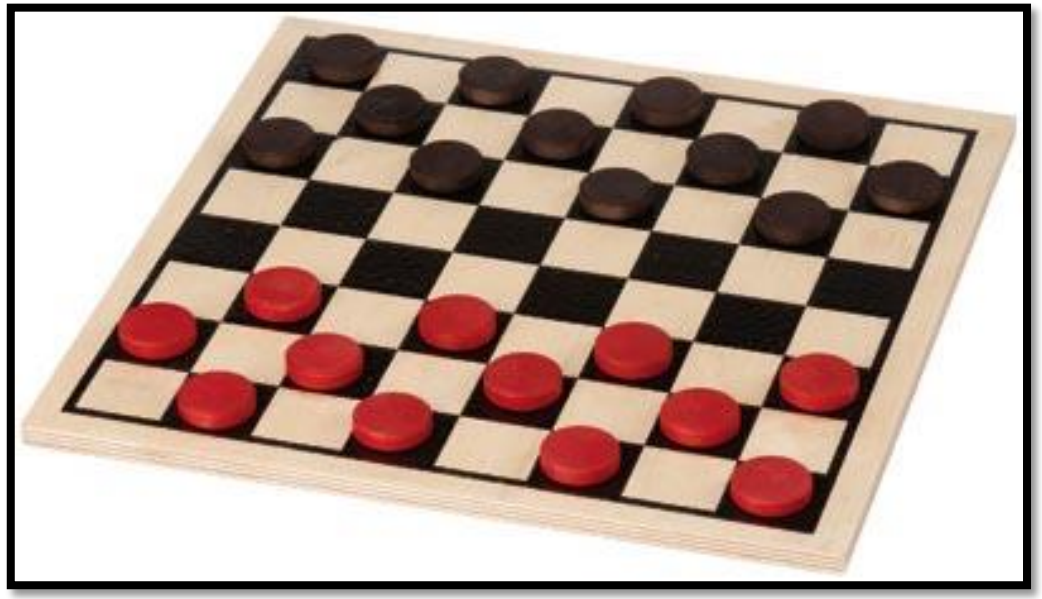
- WHAT HAPPENS WHEN YOU'RE PLAYING AGAINST THE GAME THAT ALREADY KNOWS EVERYTHING?

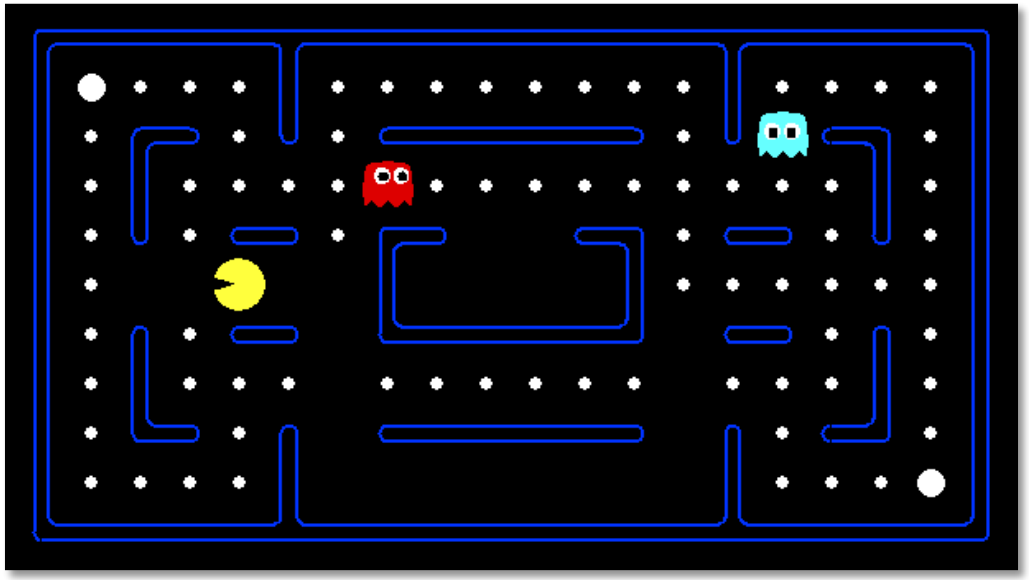
The game itself is an entity with a special status, since it's not really playing the game though it makes decisions that enables the game to happen. Your thought process is making a state machine that makes a game opponent believable.

actions

What does the player do in the game?

- OPERATIVE ACTIONS
- These are simply the base actions that a player can take





Examples

Checkers:

-Move a checker forward

-Jump an opponent's checker

-Move a checker backwards (king only)

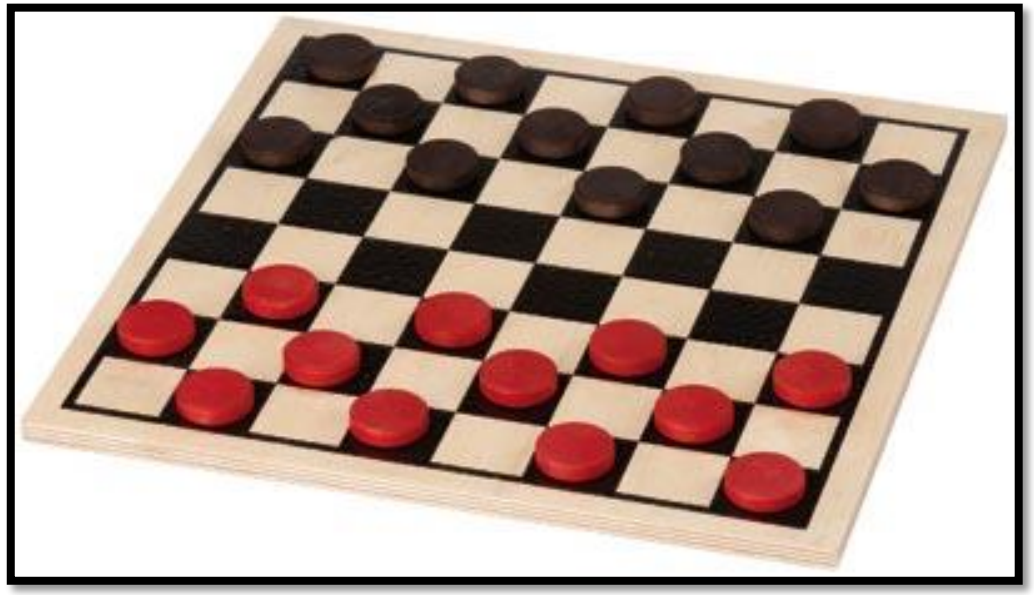
PACMAN

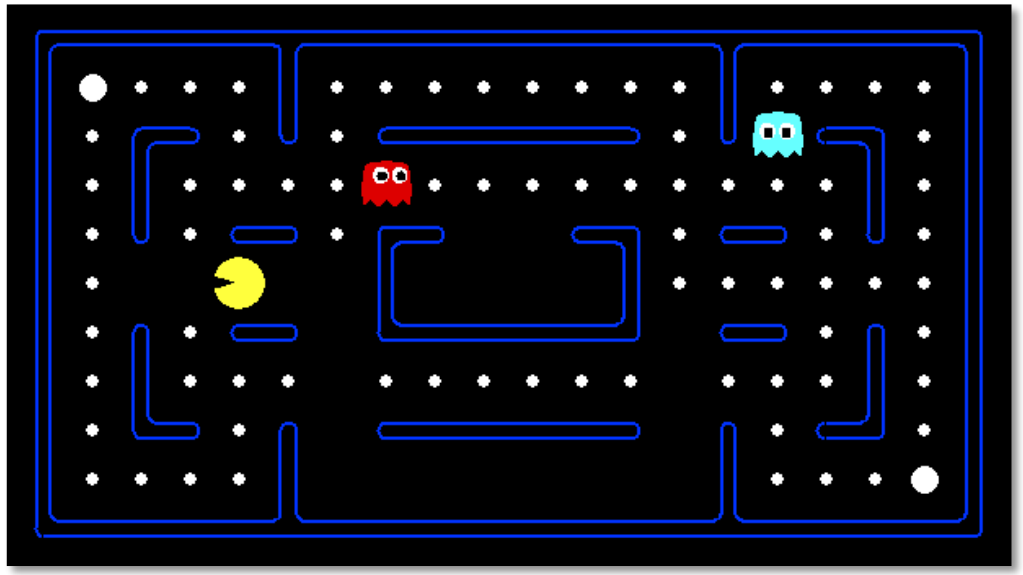
-Move in a direction

-Consume

What does the player do in the game?

- RESULTANT ACTIONS
- These are actions that are only meaningful in the larger picture of the game – they have to do with how the player is using operational actions to achieve a goal.





Examples

Checkers:

-Protect a checker from being captured by moving another checker behind it

-Force an opponent into making an unwanted jump

-Move checker into king row to make it a king

PACMAN

-Can you think of some?

The concept of emergent gameplay

- THE RATIO OF MEANINGFUL RESULTANT ACTIONS TO OPERATIVE ACTIONS IS A GOOD MEASURE OF HOW EMERGENT THE GAME IS

An elegant design comes from allowing a player a small number of operation oriented actions, but a large number of effect-oriented actions which adds extra layers of depth and strategy.

How to achieve emergent gameplay

- ADD MORE OPERATIVE ACTIONS

The resultant actions appear when operative actions interact with each other, with objects and with the game space.

How to achieve emergent gameplay

- ACTIONS THAT WORK WITH MANY OBJECTS

If you give the player a gun that can only shoot bad guys, you have a very simple game. But if that same gun can also be used to shoot a lock off a door, break a window, hunt for food, pop a car’s tire, you now start to have a world of many possibilities

How to achieve emergent gameplay

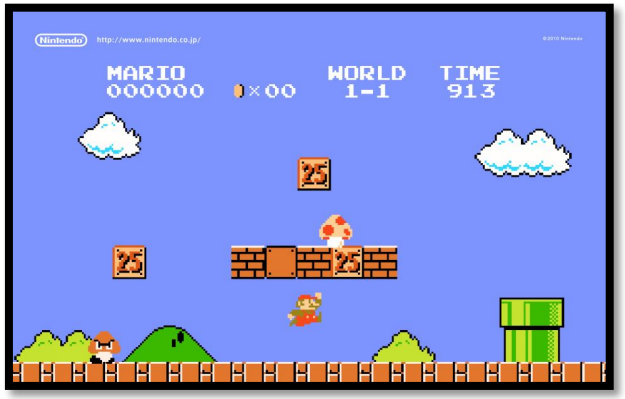
- GOALS THAT CAN BE ACHIEVED IN MORE THAN ONE WAY

If the goals can only be achieved in one way, players have no reason to look for unusual interactions and interesting strategies.

How to achieve emergent gameplay

- ADD MORE OBJECTS

If checkers involved just one red checker and one black one, but had the same rules, the game would not be interesting at all.



Actions define your game

The actions a player can take are so crucial to defining a game's mechanics that changing a single action can give you a completely different game.

rules

- DEFINITION

Rules define the space, the objects, the actions, the consequences of the actions, the constraints on the actions and the goals.

Types of rules

- OPERATIONAL RULES

These are the easiest to understand . They are basically, “what the players do to play the game” when the players understand operational rules, they can play the game.

- BEHAVIOURAL RULES

These are rules that are implicit to gameplay, which most people naturally understand as part of “good sportsmanship”

Types of rules

- WRITTEN RULES

These are the rules that come with the game. The document that the player have to read to gain an understanding of the operational rules

- LAWS

These only form when games are played in a serious, competitive settings, where the stakes are high enough to have a need to explicitly state what is allowed or not allowed to be done

Types of rules

- ADVISORY RULES

Often called “rules of strategy”, these are just tips to help you play better, and not really “rules” at all from a game mechanics point of view.

- HOUSE RULES

Players play a game, they may find they want to tune the operational rules to make the game more fun.

The most important rule of all

Clearly state a GOAL! Good games have three important qualities:

-Concrete

-Achievable

-Rewarding

Skill

I’m owning at this game!

The mechanic of skill shifts the focus away from the game and onto the player.

Every game requires players to exercise certain skills.

If the player’s skill level is a good match to the game’s difficulty, the player will feel challenged and stay in the flow.

Types of skills

Physical Skills

Requires strength, dexterity, coordination, and physical endurance.

Mental Skills

Includes the skills of memory, observation, and puzzle solving

Social Skills

Include reading an opponent, fooling an opponent, and coordinating with teammates.

Enumeration Skills

- Make a list of all the skills required in your game can be very useful
- It easy to fool yourself into thinking your game is about one skill, when other skills are actually more important
- The skills that a player exercises go along way toward determining the nature of that player's experience, so you must know what these are.

Thank you

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