



UNIVERSITÀ DEGLI STUDI DI MILANO
DIPARTIMENTO DI INFORMATICA

OGD Lesson 002: The structure of games

Laura Anna Ripamonti – ay 2021-22



L02. Summary

1. The experience
 2. Games and «lasagna»
 3. Formal elements of games
 4. Dramatic elements of games
-
- References:
 - Chapter 2 **Game Design Workshop** T. Fullerton
 - Chapters 2, 10, 11 **The art of game design: a book of lenses** J. Schell
 - Further readings:
 - Chapter 2 **Creating Games** M. McGuire, O.C. Jenkins
 - **Declaring the rights of players** R. Koster
 - **Homo Ludens** J. Huizinga (1938)
 - **Rules of Play** Salen and Zimmerman
 - **Chris Crawford on Game Design** C. Crawford (New Riders Press, 2003)



A deck of lenses (by Schell) ...



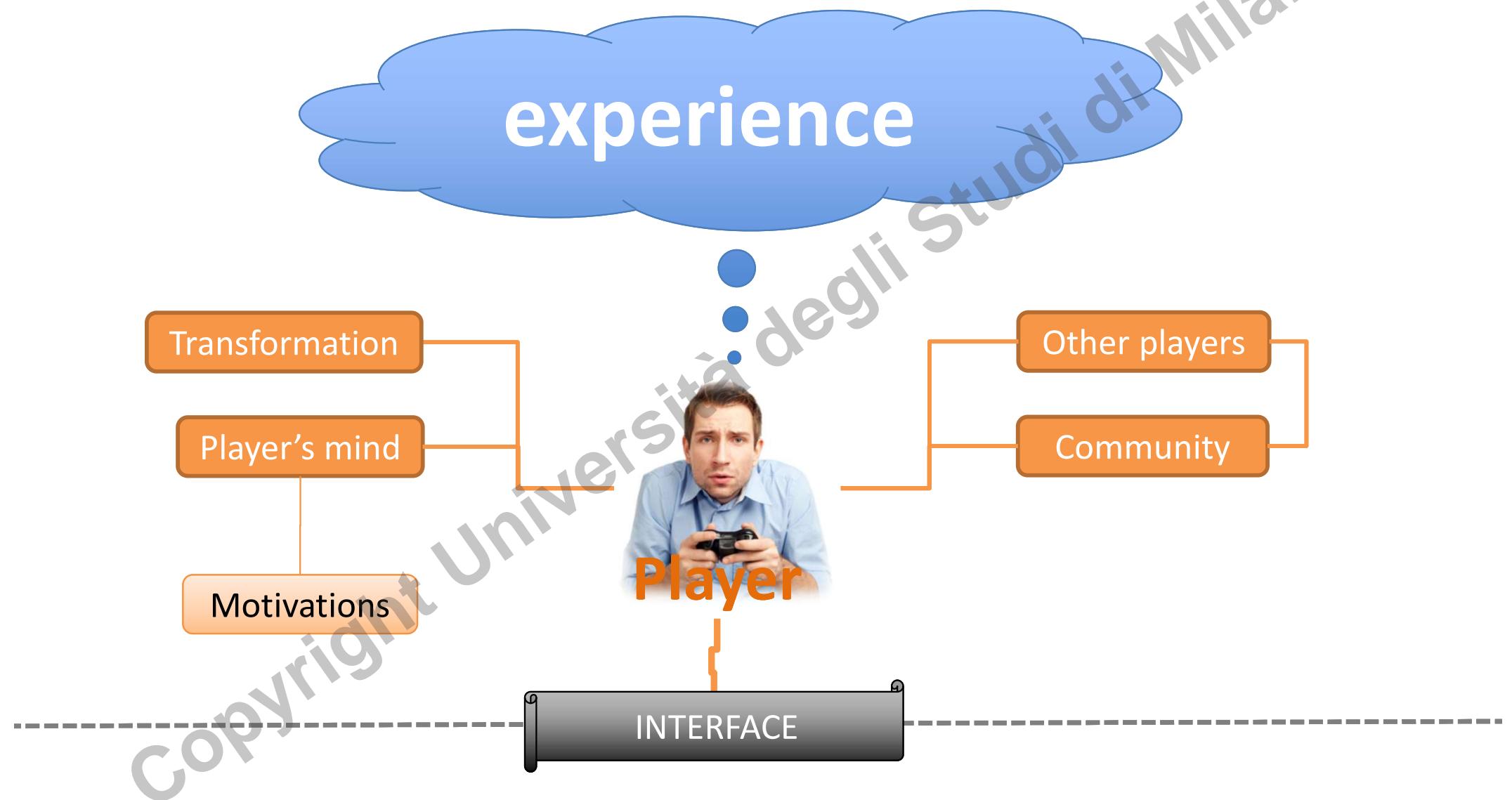
I warmly invite
you to install
(and use!) this
small app ...

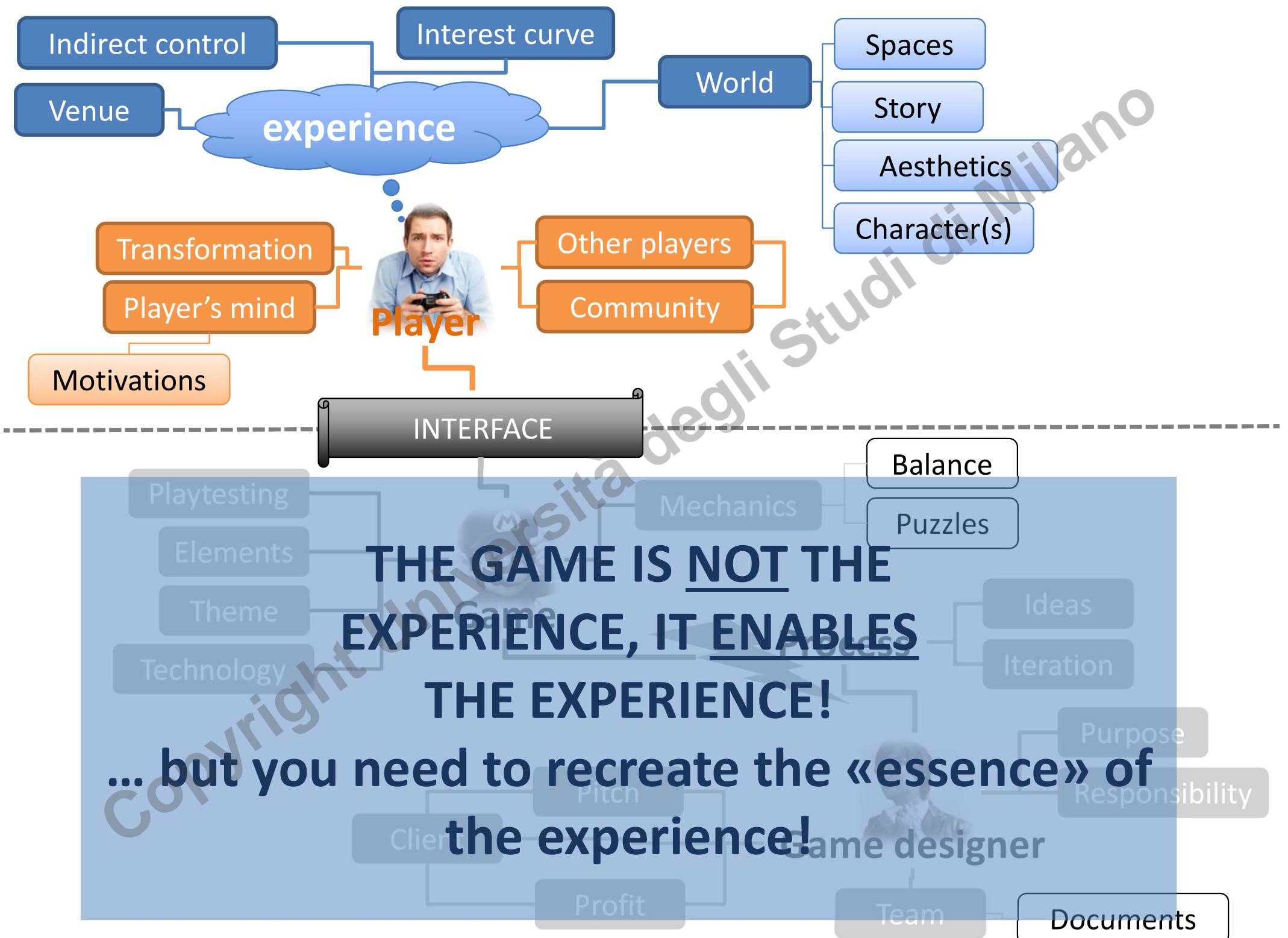
Companion to the acclaimed book "The Art of Game Design: A Book of Lenses", this convenient deck contains 100 unique "lens cards" each featuring key questions that will make your game great, and a magnificent color illustration to help you remember each principle.

Player's perspective
Game and experiences



The game ENABLES an experience





Experience and emotion: the lens of emotions

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The Lens of Emotion



Illustration by Rachel Dorrett

~People may forget what you said, but they'll never forget how you made them feel.
-Maya Angelou~

1

The Lens of Emotion



Illustration by Rachel Dorrett

~People may forget what you said, but they'll never forget how you made them feel.
-Maya Angelou~

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- Ask yourself:
 - **What emotions** would I like my player to experience? **Why?**
 - **What emotions are players** (including me) **having** when they play now? **Why?**
 - How can I **bridge the gap between** the emotions players are having and the emotions I'd like them to have?

The «essence» of an experience ...

- What about reproducing the «real experience» of a snowball fight in a game?

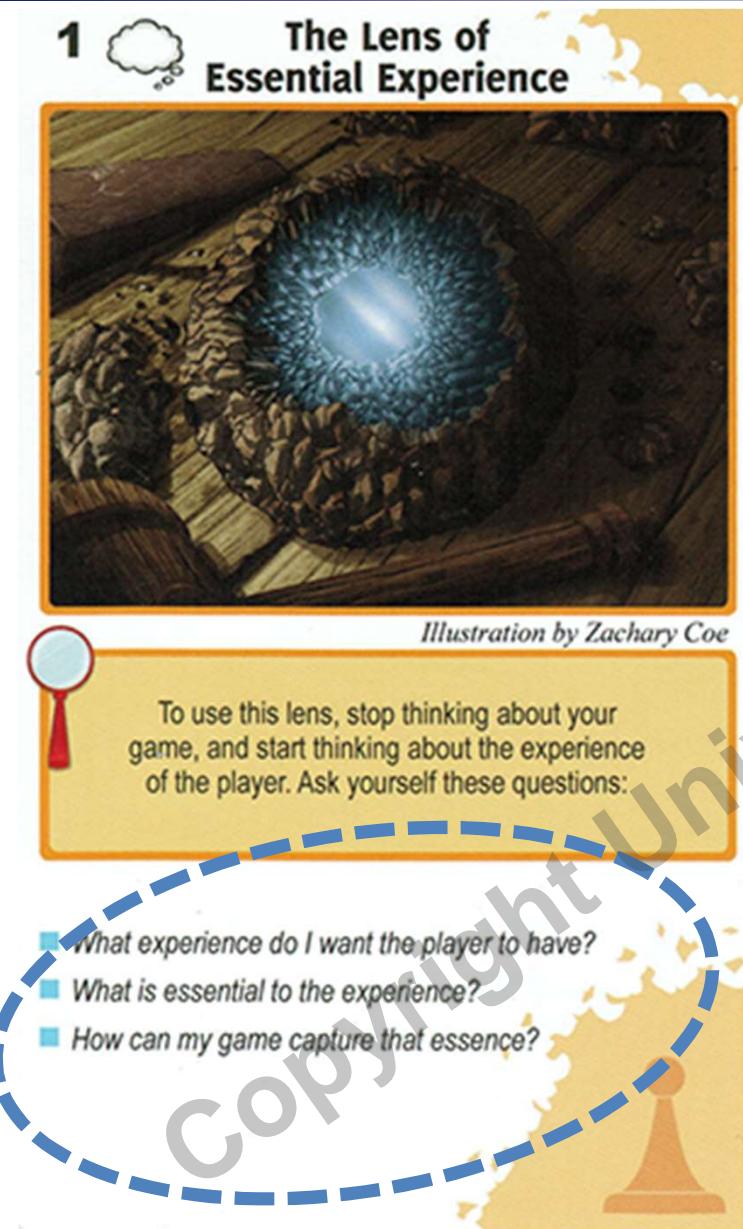


The «essence» of an experience ...

- You don't need to perfectly replicate real experiences to make a good game ...
- What you DO NEED is **to capture the essence of the experience**, that is to say:
- **the KEY FEATURES that make it special:**
 - «there was so much snow, school was canceled»
 - «We played right in the street»
 - «It was sooo cold, but sunny with a blue sky»
 - «Kids where everywhere»
 - Etc.



The lens of essential experience



- As a GD, your goal is to **figure out the essential elements that really define the experience** you want to create and **find ways to make them part of your game design**
- Ex: «snowball fight» => «So cold»
 - Use artwork: puff of breath, shivering animations, etc.
 - Use game rules: when hands get too cold, character must wear gloves and has a penalty
 - Etc.

Essential experience: example

- The use of «hero points» in risky situations to alter dice rolls ...



The experience is in the player's mind ...

Player's mind



Player

- GDs create experiences, that take place in the human brain ...
- Whose workings are hidden from us ...

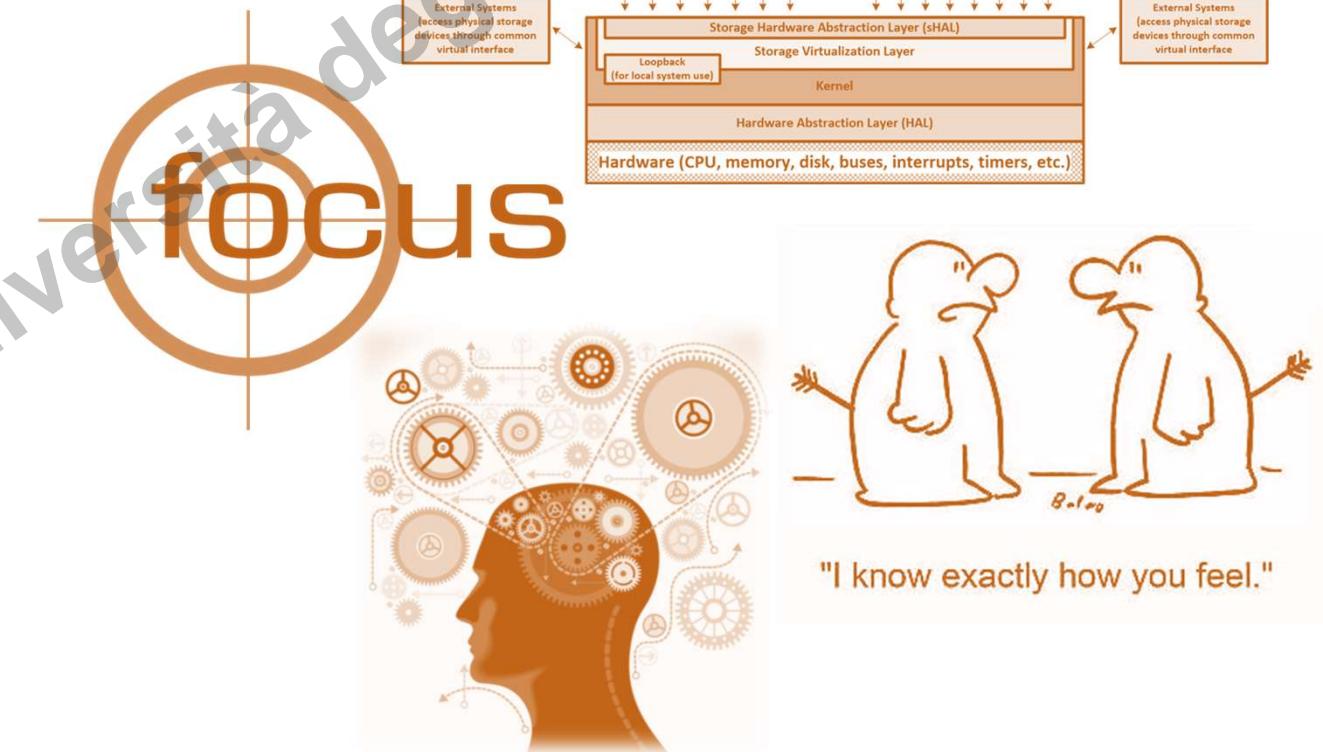
What will come next in this pattern?



The experience is in the player's mind ...

- There are four principal **mental abilities** that make gameplay possible:

1. Modeling
2. Focus
3. Empathy
4. Imagination



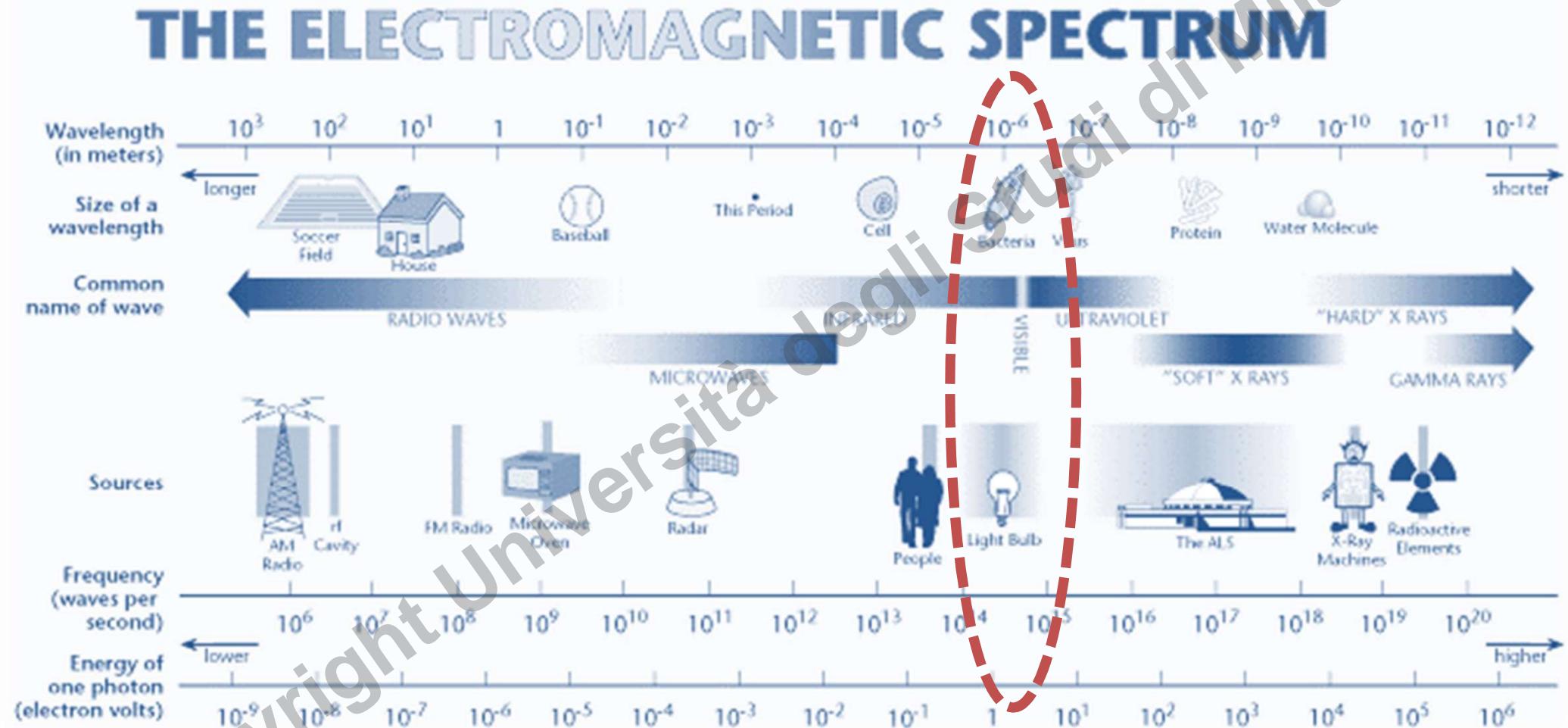
1. Modeling

- Reality is complex => our brain simplifies it
- Our mind do not deal with «reality»,
but **with models of reality**
- The modeling takes place
below our awareness



- **Consciousness is an illusion** that our internal experiences are reality, when in truth **they are imperfect simulations of something we may never truly understand ...**

1. Modeling ... imperfect simulations - example



... «colors» are only an illusion ...

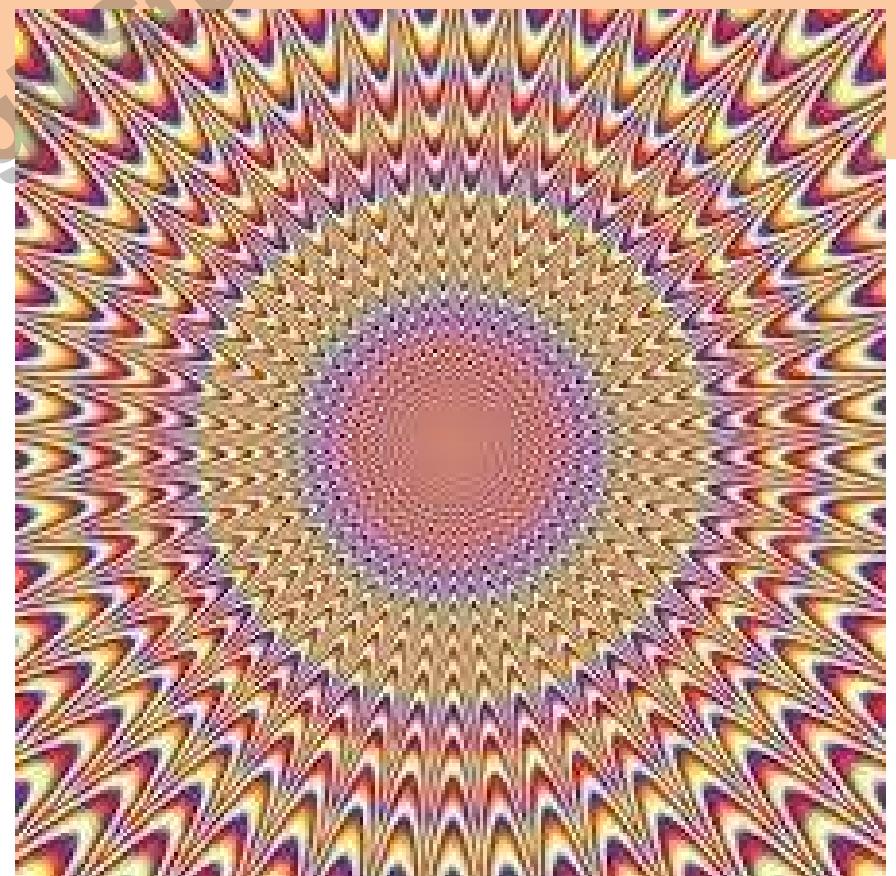
1. Modeling ... imperfect simulations



- Is this a dog ????
 - It matches our internal model
 - Big head ok cause we store much more info about faces (if the foot were big => strange/funny)
 - Made of lines: pre-digested, hence less work for our brain (this is why toons are «relaxing»)

1. Modeling: important lesson for GD

- Everything we experience is a model (reality is beyond our understanding)
- All we understand is **our model of reality**
- A GD should **understand how this illusion is formed** in the player's mind to create **experiences that feels as real as reality... !**



2. Focus (cutting out the irrelevant)

- Our brain makes sense of the world by **focusing its attention selectively** («the party effect»)
- What we focus on is determined by a mix of **unconscious desires** and **conscious will**
- A game should be an experience that **holds the player's focus as long & intensely as possible ...**

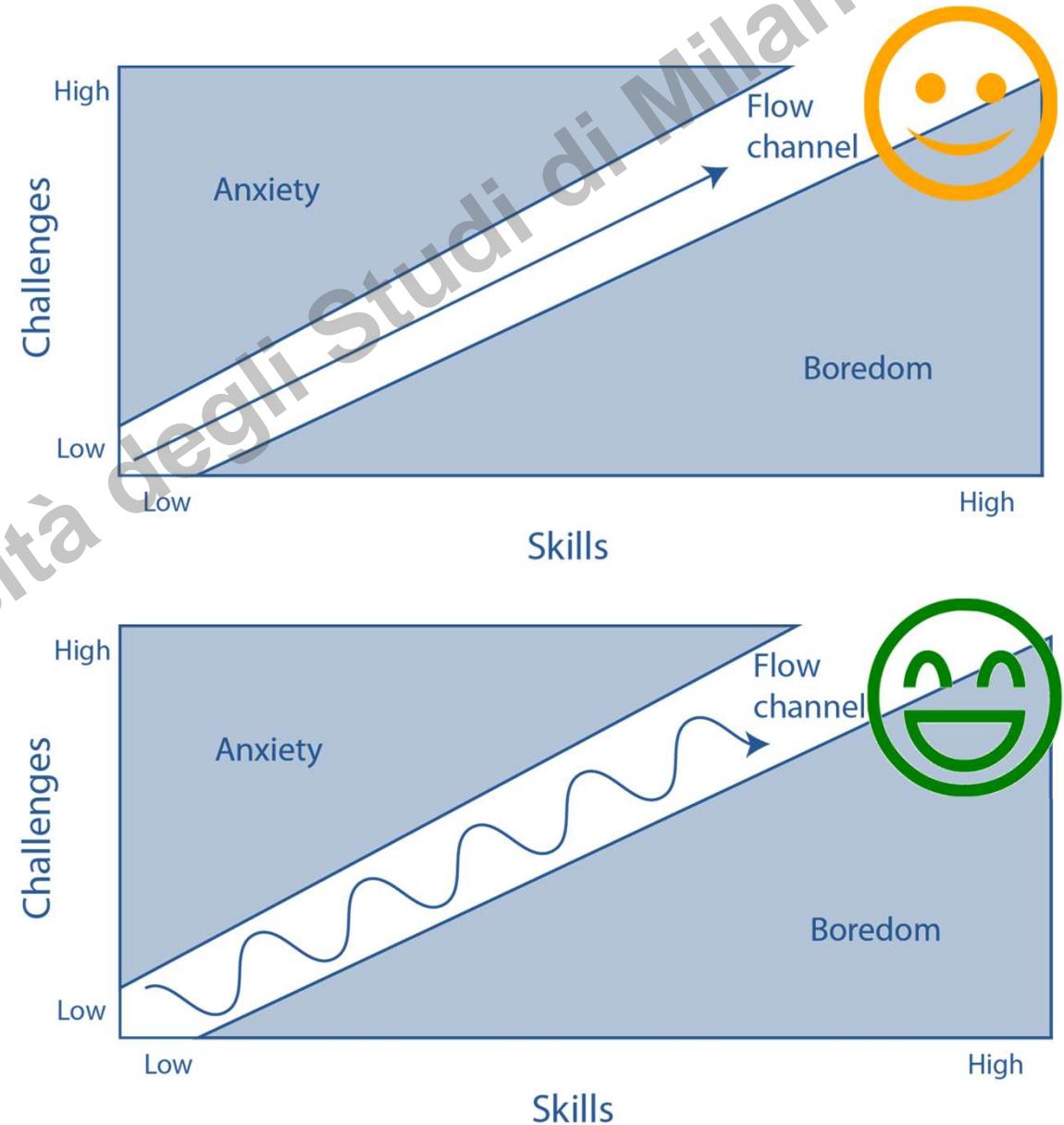
... in the FLOW



2. Some ways to move in the channel are better ...

Players love a repeating cycle of:

1. Increasing challenge
2. Reward
3. More power
4. Easier period of less challenge



2. focus: The lens of flow ...

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The Lens of Flow



- Flow is **hard to test**
 - You won't see it in 10' gameplay
 - It's easy to miss: you must learn to recognize it
- Once a player is in the flow observe her closely
 - Find the crucial moment when she leaves the flow and understand WHY to improve your game ...

3. Empathy

- Humans are **very good at projecting themselves into the place of others** (even with animals)
- Brain does this using mental models => we are **easily tricked**:
 - Cinema
 - Literature
 - Graphic art
 - Etc.



3. Empathy: important lessons for GD

- Games are **about problem solving => emphatic projection is useful!**
 - If I can imagine myself in the place of another, I can make better decisions
- A game is interactive: the player not only projects her feelings into the character, but **also her entire decision-making capability**



4. Imagination (filling in the blanks ...)

- I refer to the everyday imagination that every person uses for:

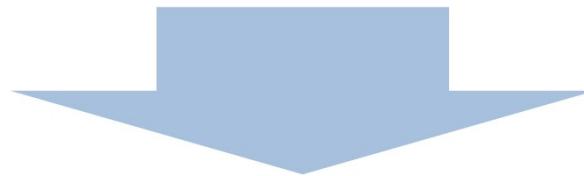
1. Communication (and storytelling!)
2. Problem solving

- Ex.: «yesterday the mailman stole my moped!»



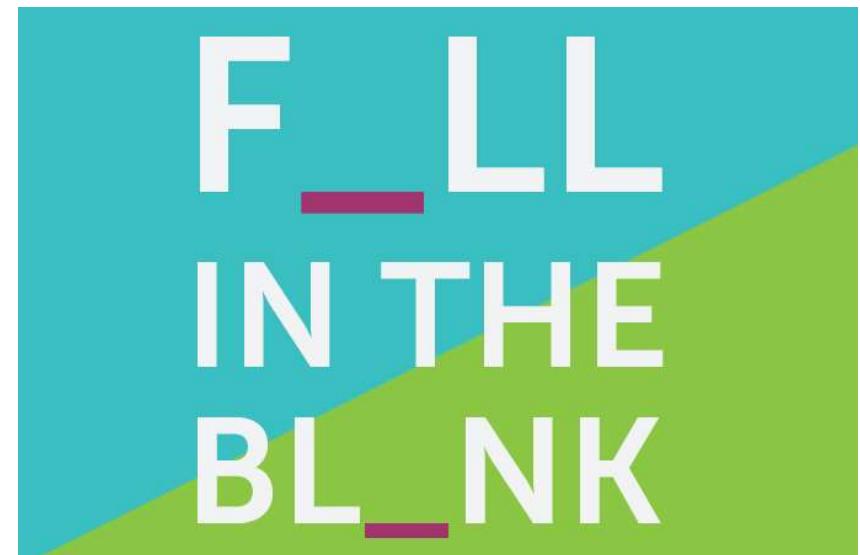
4. Imagination: important lesson for GD

- Brain fills in the blanks ...

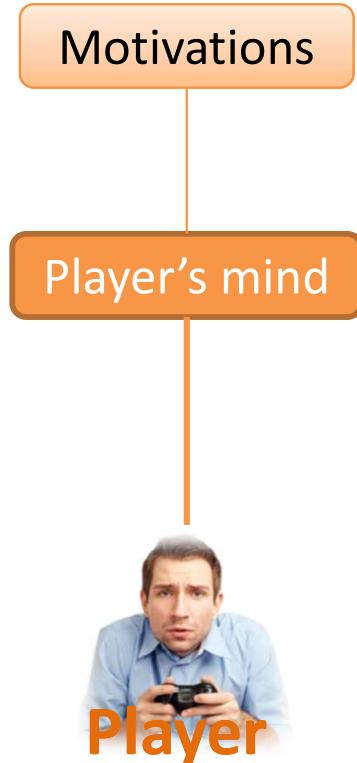


- Games do not need every detail ... players will fill in the rest!!

– Art helps in suggesting what you should show the player and what you should leave to her imagination

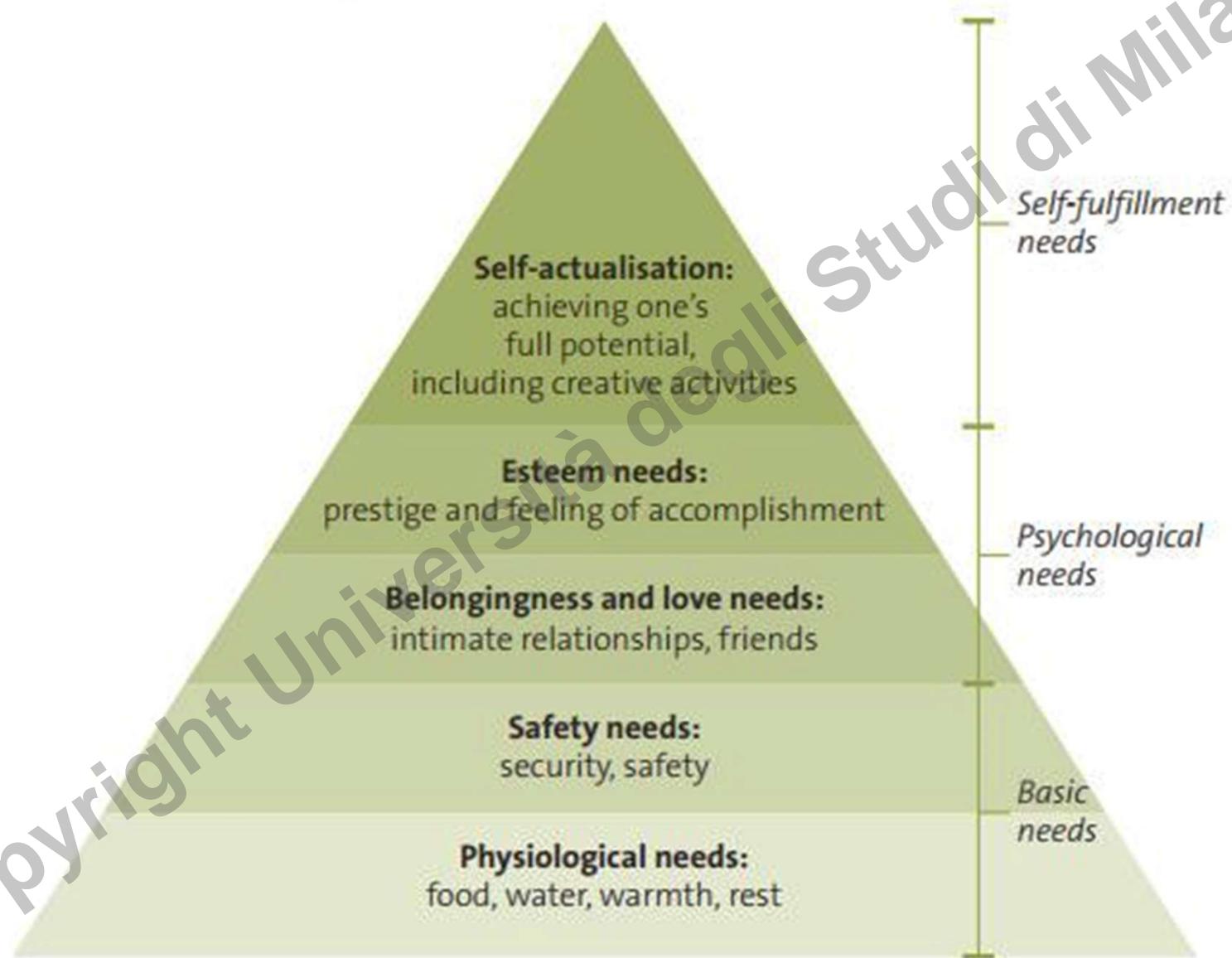


The player's mind is driven by *motivations*



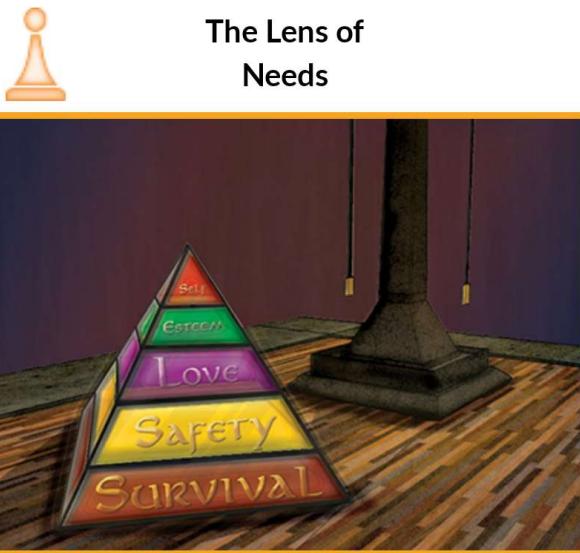
- Goal of ANY entertainment form:
 - Taking something really UNIMPORTANT and making it SEEKS IMPORTANT
- GDs should have a special insight in human MOTIVATIONS

The Maslow's hierarchy of needs (1943)



Motivations: the lens of need

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The Lens of
Needs



Illustration by Chuck Hoover



To use this lens, stop thinking about your game,
and start thinking about what basic human
needs it fulfills. Ask yourself these questions:

- On which levels of Maslow's hierarchy is my game operating?
- Does it fill the needs of competence, autonomy, and relatedness?
- How can I make my game fulfill more basic needs than it already does?
- For the needs my game is already filling, how can it fill those needs even better?

- Maslow's hierarchy can be easily applied to games:
 - Lvl 4: achievements & mastery
 - Lvl 3: multiplayer games
 - Lvl 1 to 5: Minecraft (from gathering resources and find shelter to multiplayer about mastery and creativity ...)
 - Etc.

Motivations: the lens of judgment

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The Lens of
Judgment



Illustration by Joseph Grubb



To decide if your game is a good judge of the players, ask yourself these questions:

- 4° level of Maslow hierarchy (self-esteem) is intimately connected to games and to the **need of being judged**
 - People **HATE to be judged unfairly** ...



Motivations: the lens of ... motivation !

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The Lens of
Motivation



Illustration by Dan Lin



Every game is a complex ecosystem of motivations. To examine them more closely, ask yourself these questions:

- Intrinsic vs extrinsic motivations
 - Enjoyment vs «payment» (e.g. points)
- Do they want to avoid punishment/shame or to seek rewards/fun?
 - E.g. avoiding enemies/death vs collecting items/scoring combos

- What motivations do players have to play my game?
- Which motivations are most internal? Which are most external?
- Which are pleasure seeking? Which are pain avoiding?
- Which motivations support each other?
- Which motivations are in conflict?

Motivations: the lens of novelty

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The Lens of
Novelty



Illustration by Zachary D. Coe



~Different isn't always better, but better is always different.
- Scotty Meltzer~

To ensure you harness the powerful motivation of novelty, ask yourself these questions:

- What is novel about my game?
- Does my game have novelties throughout or just at the beginning?
- Do I have the right mix of the novel and the familiar?
- When the novelty wears off, will players still enjoy my game?

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- Novelty is a **POWERFUL** motivator (humans are explorers!)
- **Thirst for novelty** is what pushes to buy new games
- Key factor: **novelty that makes you think in a whole new way**

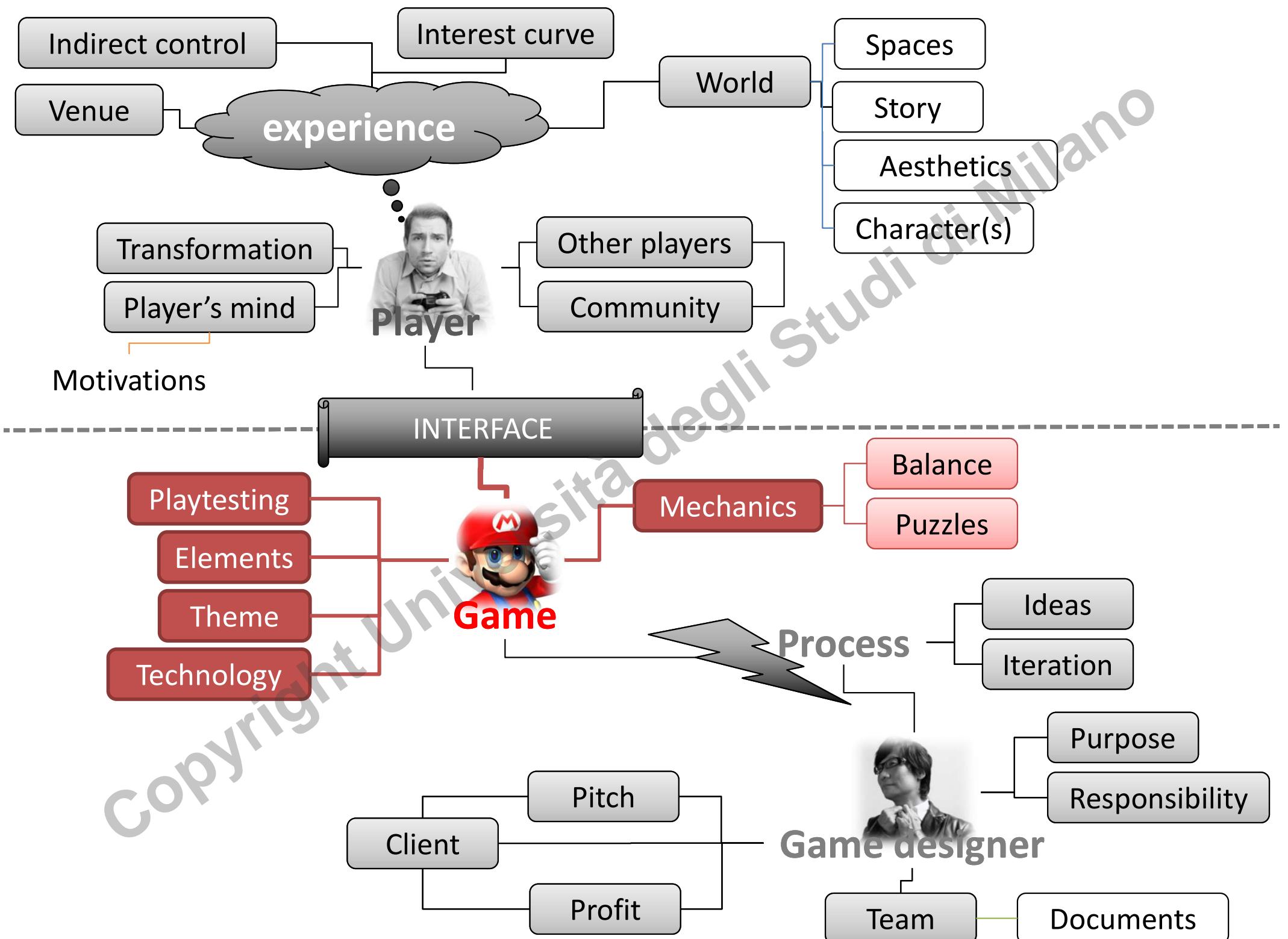


Beware of too much novelty

- Successful game: mix of novel and familiar

Games are lasagna ...??





Advice to game designers ...

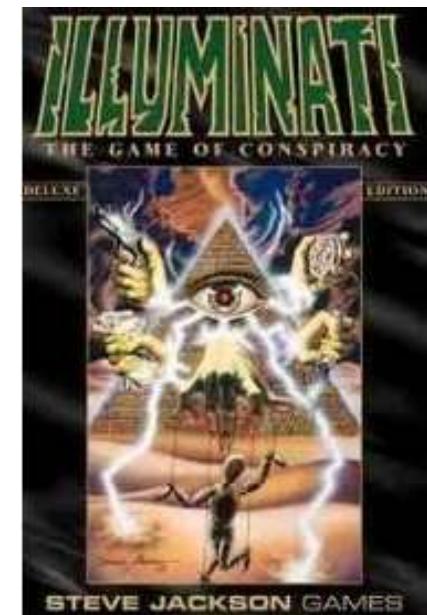
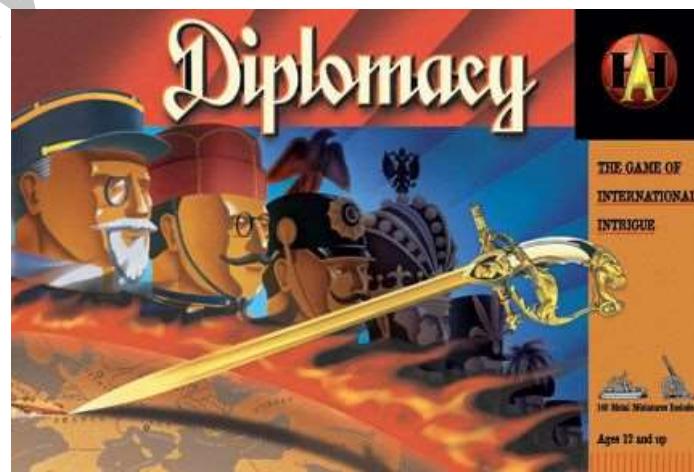
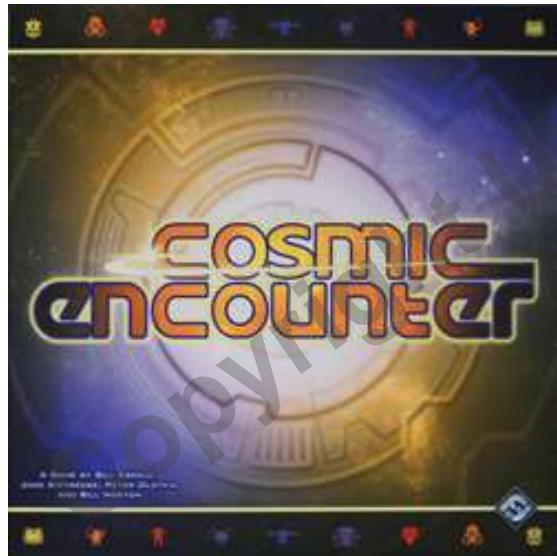
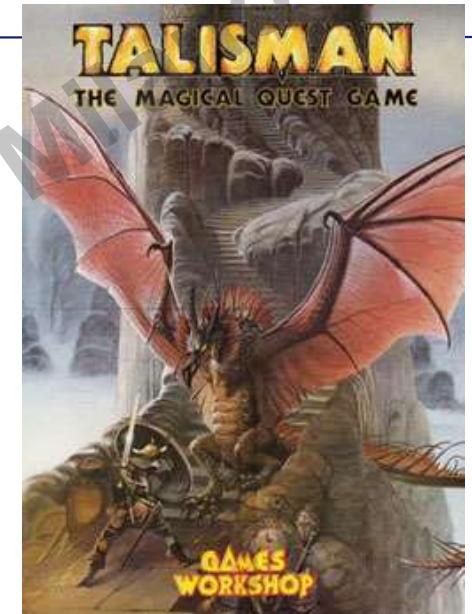
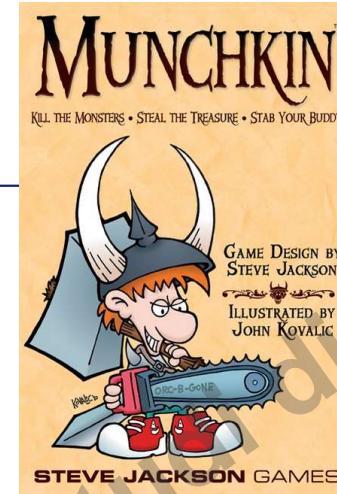
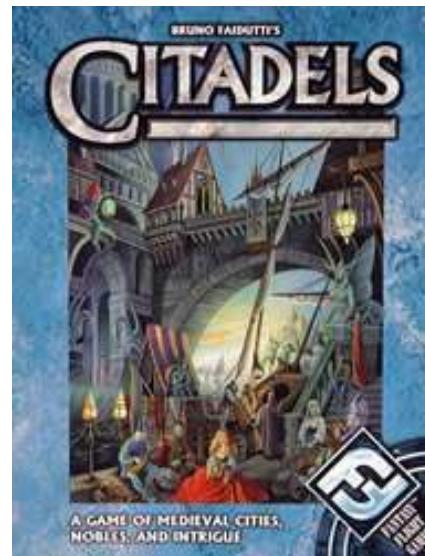
- Play many games. Play them hardcore.
- Go beyond your own insight. Just watching someone play a game can teach you a great deal about game design ...



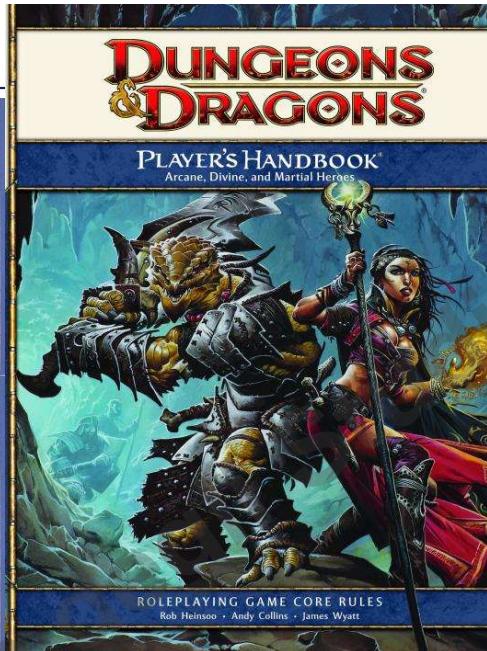
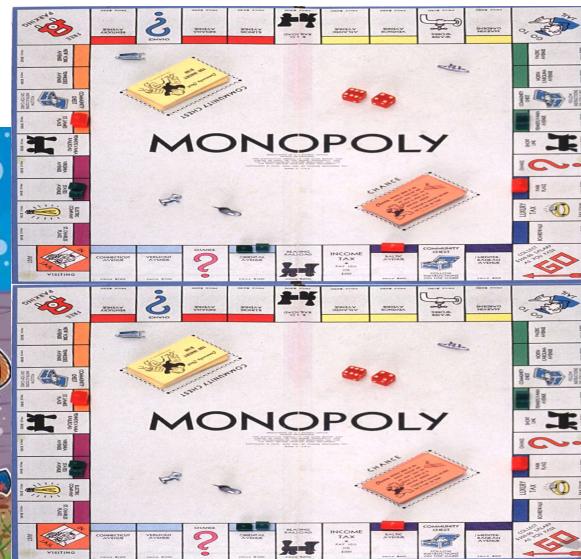
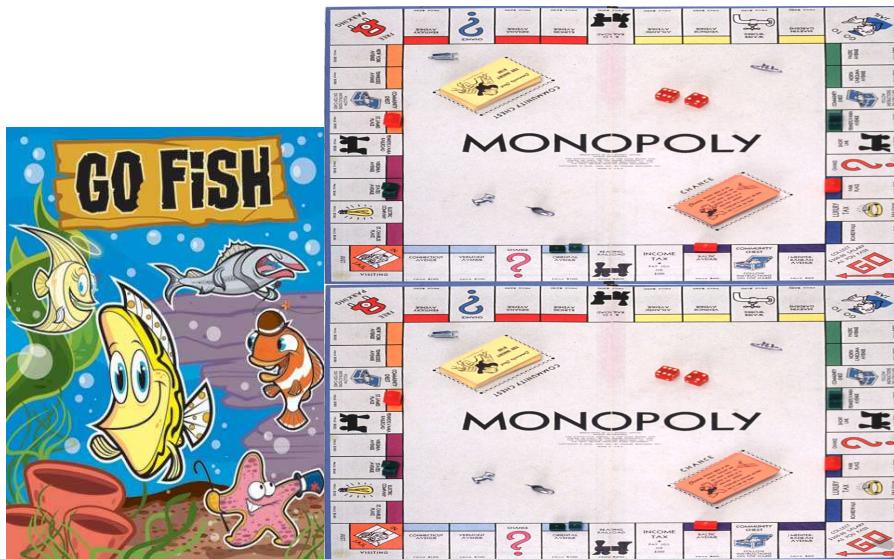
Christina Norman: LEAD
DESIGNER @ RIOT GAMES



Different (?) games ...



Different (?) games ...



They are all different, but they are all *games*... !
hence ... which are the common traits?



RisiKo!®



Different (?) games ...

SCALA 40

1. 2-X players
2. Standard 54-card deck
3. Dealer deals 13 cards to each player, etc.
4. A turn consist in drawing a card, etc.
5. The winner is the player that goes out of card, etc.



DOOM

1. Single player in 3D
2. Character can walk, run, shoot, pick up stuff, etc.
3. There are different types of weapons, etc.
4. Goal of the game: survive all the levels and kill enemies



Different (?) games ...

SCALA 40

- Turn-based card game
- Common deck of card
- Public domain rules



DOOM

- Real-time 3D shooter
- PC + commercial sw
- Copyrighted



Yet they both are **GAMES** ... which are the similarities?

Structure of a (video)game

Fiction



engagement

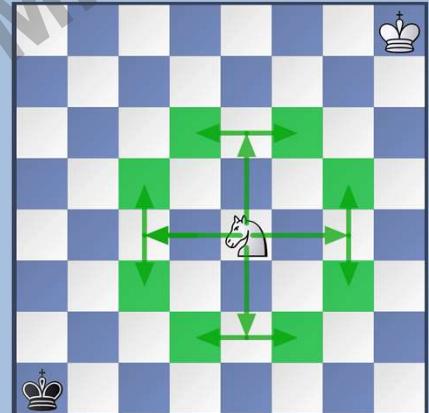
DRAMATIC els.

1. Challenge
2. Play
3. Premise
4. Character
5. Story

FORMAL els.

1. Players
2. Objectives
3. Procedures
4. Rules
5. Resources
6. Conflict
7. Boundaries
8. Outcomes

Abstract game



structure

Player mental model

enemies

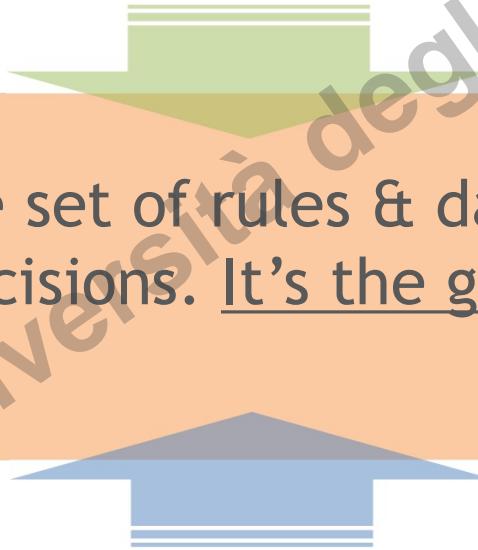


my army

Beware of
dynamics

Levels of abstraction

- **Fiction:** is the story the player is told, the rationale for the game world
 - It does not affect the gameplay (chess could be a space war)
 - It draws player into the game and help to form a mental model



- **Mental model:** is the set of rules & data that the player infers and uses to make decisions. It's the game the player is really playing
- **Abstract game:** is defined by the «real» rules (not those perceived by the player!)
 - Rules can be mixed up with fiction (e.g. poker)

Levels of abstraction: mental model

- Mental models are often partially incorrect

- Fiction could be so compelling to mislead (on purpose) the player



- Half-life headcrab:

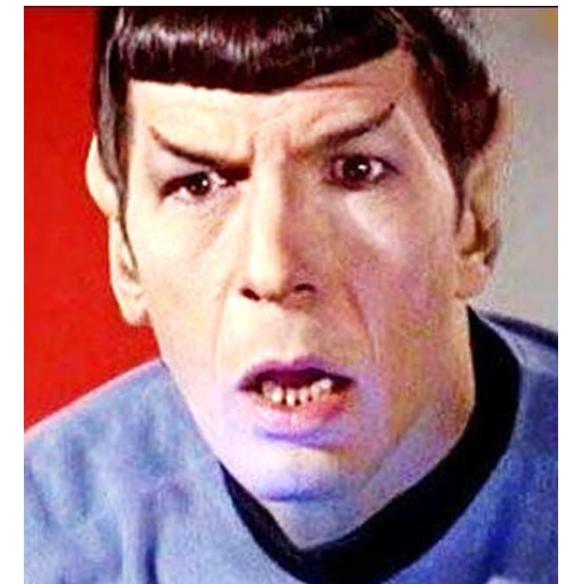
- Zombies appear to have headcrabs => player infers that a headcrab latched on a scientist will transform her into a zombie => FALSE
 - Killing headcrabs to save scientists is only a loss of time (suboptimal decision)



BUT ...

Levels of abstraction: mental model

- ... believing to have saved the scientists and wiping out the enemies is very satisfying ...
- An incorrect mental model might make a game more attractive than a correct one !!
- Often the goal of a game is NOT «to win as efficiently as possible», but to enjoy the process of playing



The abstract game

Formal elements of (video)games



Formal el.: 1. Players

- Games are experiences designed for players
- Games require active participation by their consumers !

- “**Players**”:
 - Participate voluntary
 - Both partake and consume the entertainment (unlike music/movies/theatre/...)
 - Voluntary accept rules and constraints (lusory attitude)
- “**Lusory attitude**”:
 - Is the “curious state of affairs wherein one adopts rules which require one to employ worse rather than better means for reaching an end” (Bernard Suits)



Formal el.: 2. Objectives

- Games lay out specific goals for the players !
- “**Objectives**”:
 - Not present in other form of entertainment (books, movies, music, etc.)
 - key elements: without them the experience loses much of its structure
 - Our involvement into the game is measured by our need to work towards the goal.



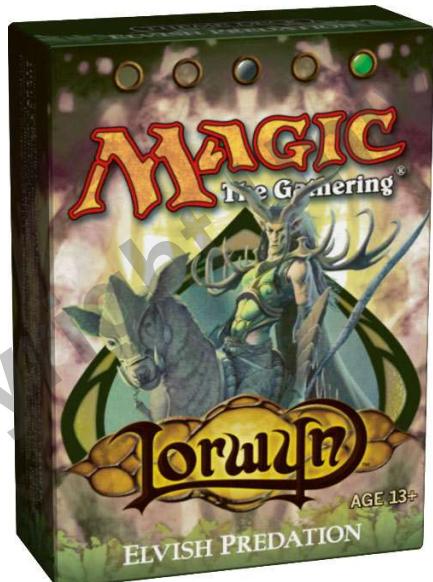
Formal el.: 3. Procedures

- Games have accurate description of what player can do to achieve the goals: rules allow specific actions/methods of play !
- “**Procedures**”: guide players behaviour, creating interactions that would probably never take place outside the game
 - Ex: in Magic the Gathering, if I need a certain card I simply cannot look through the deck for it, even if this would be much more efficient ... !



Formal el.: 4. Rules

- **Rules :**
 1. **define game objects and concepts**
(e.g. deck of cards, draw pile, etc.)
 2. **Limit player behaviour and forbid specific events**
(e.g. “you cannot use rifle bullet with a plasma gun”)



Procedures & rules

- Procedures & rules



- **AUTHORITY** that stems from an implicit agreement by the players to submit (=> no person associated with it)



- **GAMES** = experiences with rules that define objects and principles and limit behaviour. Rules are key structural elements (=> respected)

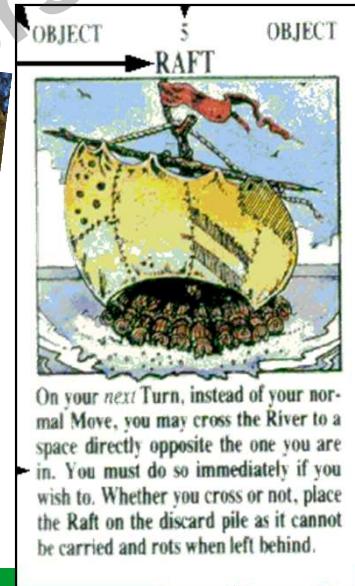
... in fact: try to describe a game with NO rules ...!!

Formal el.: 5. Resources

- **Resources** = objects valuable for achieving the game goal, made scarce by the designer
- Finding/managing resources is key part of many games

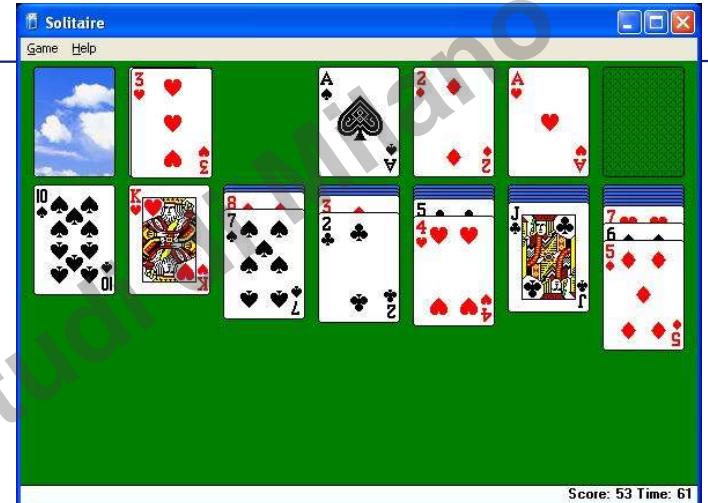


- Value of the resource <=> scarcity & utility



Formal el.: 6. Conflict

- Games lay out goals, but rules and procedures:
 - Deter players from achieving them
 - Make players work against each other



- This generates **CONFLICT**, that can configure in different ways:



Formal el.: 7. Boundaries

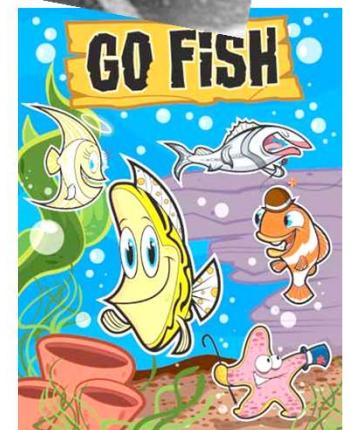
- Objectives & rules apply in the game,
NOT in real life



- Create **BOUNDARIES**, that can be:
 - Physical (3D space in a videogame)
 - Conceptual (social agreement in GoFish)



- Huizinga (*Homo Ludens*) => **Magic Circle**:
 - “*a temporary world where the rules of the game apply, rather than the rules of ordinary world*”
 - The playground is marked off either ideally or materially (arena, card deck, court of justice, temple, etc.)



Formal el.: 8. Outcome

- Objectives ≠ **outcome**:
 - I can achieve the goal, but nevertheless lose ...
- The outcome:
 - is **uncertain**
 - is **measurable** and **unequal** (a winner, a loser, different scores, etc.)



- **Uncertainty** is central for players (it's a key factor for a game designer)!
 - If I can anticipate the results, I give up playing because it is boring...



Formal elements of games

- We have examined only elements that ALL games share
- They provide a **STRUCTURE** to the game
- This taxonomy is not graved in stone ... it aims at providing:
 - Conceptual tools
 - Shared vocabulary
 - Contextualisation

- 
- 
- experimenting
 - creating alternatives
 - inspiring
 - understanding problems
 - etc.

1. Players
2. Objectives
3. Procedures
4. Rules
5. Resources
6. Conflict
7. Boundaries
8. Outcomes

Be sure to examine all of them in your game concept!

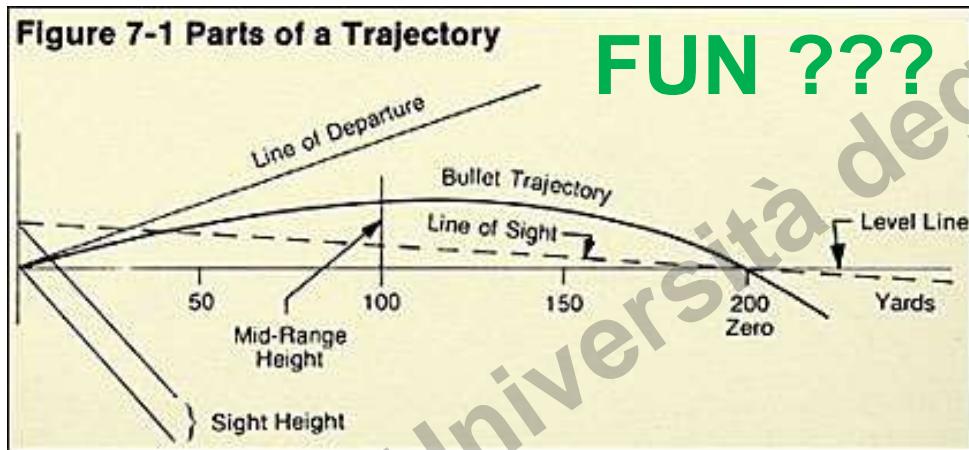
Formal elements of games

- Is this enough??
- Formal elements *alone* can provide
... ... an **intriguing** game??



Engaging the player ...

- Structure of the game ⇔ formal elements
- Engagement of the player ⇔ ???



- Good entertainment moves us intellectually and emotionally
- Different players ⇔ different drivers of engagement

Do u remember...?
Metaphores ...

The fiction

Dramatic elements of (video)games



Dramatic el.: 1. Challenge

- Games create **conflict**, that the player tries to resolve in her own favour
- Conflict **CHALLENGES** players (to solve problems) and generates **TENSION** :

– Challenge RISING:

- Achievement, ..., Frustration

– Challenge FLAT/FALLING:

- Boredom

Do u remember...? Too hard, too hard & too fast, etc.

Do u remember...? Too easy, I beat it, it's repetitive, etc.

Balancing emotional responses to the amount of challenge is a key to keep players engaged !!

Dramatic el.: 2. Play

- Play itself is **NOT** a game ... as a matter of fact:
Play = “free movement within a more rigid structure”
(Salen & Zimmerman)
- The more rigid game systems can provide opportunities for players to use imagination, fantasy, inspiration, social skills, etc. to achieve goals



Dramatic el.: 2. Play

- **Play** can be:
 - Serious (Chess or Magic tournament, ...)
 - Charged and aggressive (multiplayer Quake tournament, ...)
 - An outlet for fantasy (City of heroes, WoW, Star Wars Galaxies, Minecraft...)



Dramatic el.: 2. Play

- Chris Crawford distinguishes 4 types of **play**:



- **GAMES**: rules-based systems, goal = to win (beating an opponent)
- **PUZZLES**: rules-based systems, goal = to find a solution
- **TOYS**: manipulable, no fixed goal
- **STORIES**: cannot be manipulated by players

Dramatic el.: 2. Play

- Different type of **play** can be mixed to imagine new challenges / intrigue the players:
 - **games** including some **puzzles**: Quake, LEGO Indiana Jones/Lord of the Rings, etc.
 - **puzzles** that include a **toylike construction set**: The Incredible machine, etc,
 - **toy** that players make **puzzle-like** through their goals: SimCity, Minecraft, etc.
 - **story** told partly through **puzzles**: Myst, etc.



Dramatic el.: 2. Play - example Pokemon Go



Dramatic el.: 3. Premise

- The **Premise** creates a context to the formal elements:
 - Easier for players to contextualize choices
 - Powerful tool to involve players emotionally



Dramatic el.: 4. Character

- **Characters:**

- Traditional storytelling: agents through which stories are told
- Modern (video)games: vessels for participation



Powerful **tools** for player engagement



Dramatic el.: 5. Story

- Some games use story to engage players emotionally
- NB: Premise ≠ **STORY**:
 - has narrative qualities
 - Unfolds during the game (premise could be self-contained)
- Big question: how much story is enough?



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Summing up ...
Formal + dramatic elements ...



Formal & Dramatic elements of games

FORMAL

1. Players
2. Objectives
3. Procedures
4. Rules
5. Resources
6. Conflict
7. Boundaries
8. Outcomes

DRAMATIC

1. Challenge
2. Play
3. Premise
4. Character
5. Story

STRUCTURE

ENGAGEMENT

And ... then?

- Games are **SYSTEMS**:

- They are **groups** of interrelated elements that work together to form a complex whole



- We cannot predict exactly what will happen when the game is played simply by analysing its elements (formal & dramatic)

Do u remeber?

Games are iconified representation of human experience, but also **LIMITED FORMAL SYSTEMS** ...



Just to sum up

- Games:
 - are given structure by their formal els.
 - are emotionally engaging thanks to dramatic els.
 - are dynamic systems
 - are closed systems, separated from real life (u won't kill your best friend in RL ...)
 - are formal systems (defined by formal els.)
 - Engage players in structured conflicts
 - Resolve their uncertainty in unequal outcomes

