Game Design Frameworks

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Design Pillars

- 3-5 simple statements that communicate the core elements of the game.
  - E.g. The four design pillars of **DOOM (2016)** are '**demon individuality**', '**weapon distinctiveness**', '**fast-paced combat**', and '**maintaining the power of the player**'.
  - E.g. The four design pillars of **The Last Of Us** are '**crafting and resource management**', '**communicating narrative**', '**meaningful AI relationships**', and '**stealth combat**'.
- All implemented mechanics, systems, and design ideas should serve the design pillars.

- https://www.raspberrypi.com/news/how-pillars-and-triangles-can-focus-your-game-design/
- https://www.gamedeveloper.com/design/design-pillars-the-core-of-your-game
- https://www.gamedeveloper.com/design/cyber-demons-the-ai-of-doom-2016-

Mechanics, Dynamics , Aesthetics *(MDA framework)*

- **Mechanics** are generated through the foundational components of a video game (rules, actions, programming architecture, etc.).
- **Dynamics** are generated through the cooperation that occurs between mechanical systems in the game and the actions (input) of the player.
- **Aesthetics** are generated through the emotional responses of players.
- Helps to anticipate how game modifications impact each aspect of the framework, and in turn the resulting implementation.

- https://en.wikipedia.org/wiki/MDA_framework
- https://users.cs.northwestern.edu/~hunicke/MDA.pdf
- https://gamedevelopertips.com/mechanics-dynamics-aesthetics-game-design-theory-behind-games/
- https://medium.com/@jenny_carroll/using-the-mda-framework-as-an-approach-to-game-design-9568569cb7d

Mechanics, Dynamics , Aesthetics *(MDA framework)*

- Uses core terms in place of generic game development terms such as ‘gameplay’ and ‘fun’
  - The foundation of the more directed vocabulary includes (but is not limited to):

- **Sensation**
  - Consider the game as ‘sensory pleasure/stimulation’
- **Fantasy**
  - Consider the game as a ‘make-believe world’
- **Narrative**
  - Consider the game as a ‘dramatic/engaging story’
- **Challenge**
  - Consider the game as an ‘obstacle course’
- **Fellowship**
  - Consider the game as a ‘social framework’
- **Discovery**
  - Consider the game as ‘uncharted territory’
- **Expression**
  - Consider the game as a ‘platform for self-expression and discovery’
- **Submission**
  - Consider the game as a ‘pastime’

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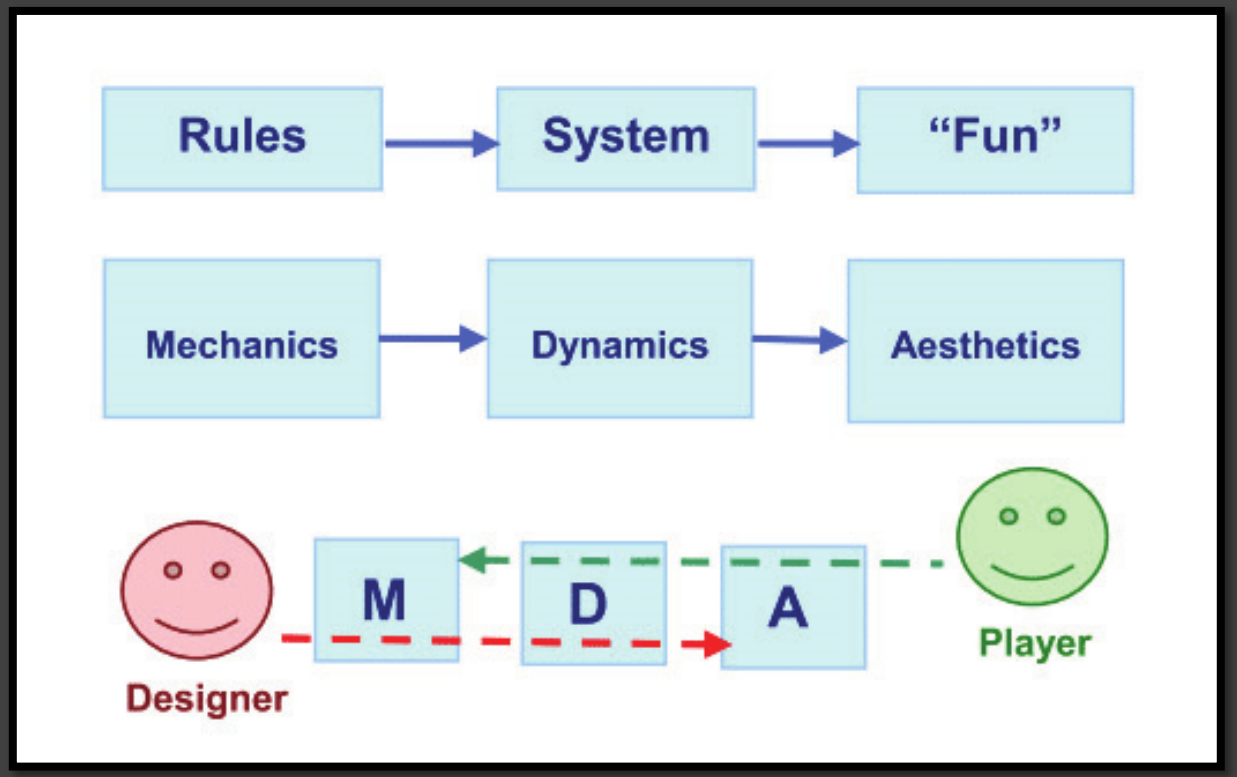
Mechanics, Dynamics , Aesthetics *(MDA framework)*



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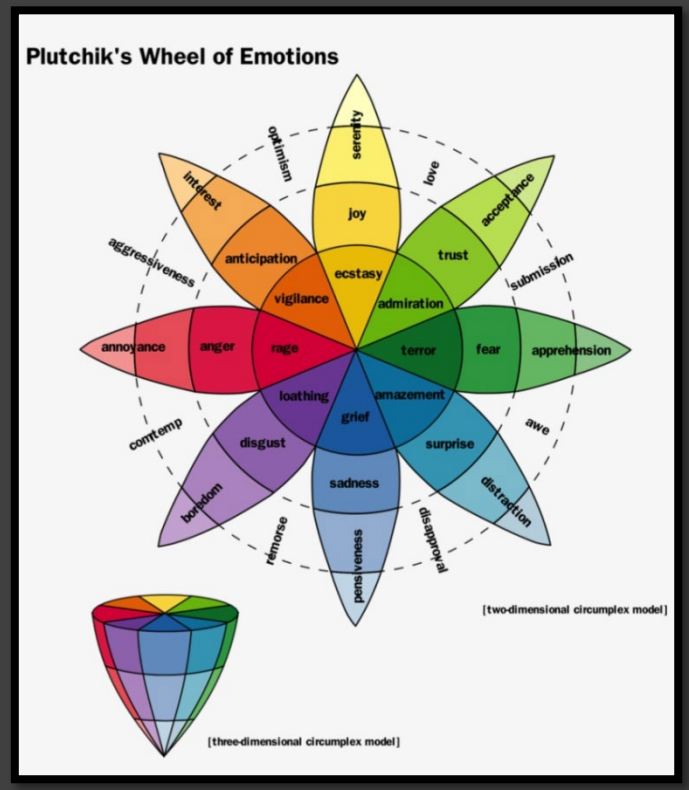
6 Basic Emotions, 11 Instincts *(6-11 Framework)*

- Assumes that players subconsciously act on 6 basic emotions and 11 instincts in order to generate fun when playing games.
- **Emotions** can trigger instincts.
- **Instincts** push the player to decide to act.
  - Can translate instincts into gameplay and actions.



- https://www.academia.edu/1571687/THE_6_11_FRAMEWORK_A_NEW_METHODOLOGY_FOR_GAME_ANALYSIS_AND_DESIGN
- https://bootcamp.uxdesign.cc/the-6-11-framework-for-game-analysis-and-design-e3c7998fcc78
- https://www.slideshare.net/robertodillon/the-age-framework

6 Basic Emotions, 11 Instincts *(6-11 Framework)*

- 6 basic emotions
  - **Fear**
    - Stimulated through the threat of (imagined) physical or emotional harm
  - **Anger**
    - Stimulated through the prevention of achieving desired goals
    - Stimulated through imbalance and unfair treatment
  - **Pride**
    - Stimulated through progressive rewards and the achievement of desired goals

- 6 basic emotions *(cont.)*
  - **Joy**
    - Stimulated through positive experience and reinforcement
    - Stimulated through sensory pleasure
  - **Excitement**
    - Stimulated through unexpected changes in states (gameplay, emotion, etc.)
    - Stimulated through triggering instincts and other emotions
  - **Sadness**
    - Stimulated through the loss of meaningful relationships (people, items, places, etc.)

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6 Basic Emotions, 11 Instincts *(6-11 Framework)*

- 11 instincts
  - **Self-identification**
    - Self-expression
    - Role-play
  - **Exploration/curiosity**
    - Motivated by desire for progression (e.g. finding new resources)
  - **Protection/care**
    - Motivated by impulse to help vulnerable entities
    - 'Parental' responses
  - **Collecting**
    - Motivated by practical reasons (e.g. resource gathering)
    - Motivated by emotional reasons (e.g. collecting cosmetics)
  - **Communication**
    - Identify information
    - Expressing feelings and thoughts

- 11 instincts *(cont.)*
  - **Greed**
    - Motivated by desire to be efficient (e.g. stockpiling resources)
    - Motivated by desire to win (e.g. preventing other players from being efficient)
  - **Revenge**
    - Motivated by narrative alignment of player's character
  - **Survival**
    - "Fight or flight" response
  - **Aggressiveness**
    - Motivated by desire to punish opposing players (e.g. revenge kills in a shooter game)
    - Motivated by desire to win (e.g. aggressive tactics)
  - **Competition**
    - Motivated by rivalry with others (e.g. becoming more powerful than your friend)
    - Motivated by desire to win
  - **Colour/aesthetic appreciation**
    - Motivated by natural attraction to pleasant aesthetics (e.g. well-composed focal points)

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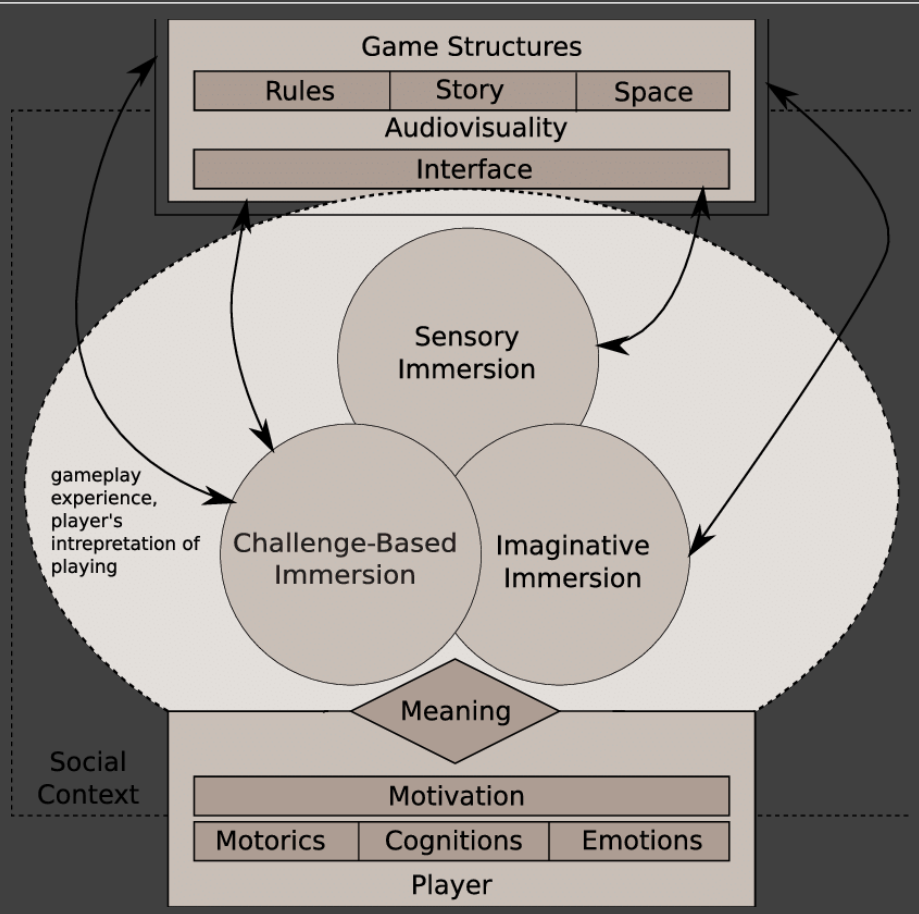
Sensory, Challenge, & Imaginative Immersion *(SCI framework)*

- Guides attention to the complex dynamics involved in interactions between the player and the game.
- **Sensory immersion** relates to how high quality graphics and audio can easily overpower sensory information coming from the real world, causing the player to focus their attention completely on the game experience.
- **Challenge immersion** relates to how immersion is most efficient when the player achieves a balance between challenge and abilities.
- **Imaginative immersion** relates to how efficiently the player is immersed in the game world and narrative, and how the identify with the game's characters.

- https://tinyurl.com/3asz3u7n
- https://www.diva-portal.org/smash/get/diva2:1089785/FULLTEXT01.pdf

Sensory, Challenge, & Imaginative Immersion *(SCI framework)*



- https://www.researchgate.net/figure/The-Sensory-Challenge-Based-and-Imaginative-SCI-immersion-model-The-model-presents_fig3_39066030

System, Story, Mental Model *(SSM framework)*

- The **system** space includes all the functional elements of the game, and can be divided into the **mechanics** and **dynamics** *(MDA framework)* of a game
  - Considers *abstract* mechanics and dynamics *(functionality only)*, rather than their presentation and how the player understands them
- The **story** space provides a layer of context for the system functionality, and can be divided into **Mise-en-scène** and **drama**
  - Mise-en-scène is a term used in film to refer to the visual composition and positioning of everything that appears before the camera
  - Drama arises from the Mise-en-scène
- The **mental model** space represents the player's personal experience and can be divided into **affordances** and **schemas**
  - Affordances relate to functionality that the player attributes to how they perceive an object
  - Schemas relate to how a player thinks they should behave/respond in various situations, and how the situations unfold
  - Arises from the story and system spaces being experienced together

- https://www.gamedeveloper.com/design/the-ssm-framework-of-game-design
- https://www.diva-portal.org/smash/get/diva2:1089785/FULLTEXT01.pdf
- https://en.wikipedia.org/wiki/Mise-en-sc%C3%A8ne

System, Story, Mental Model *(SSM framework)*

- Using SSM the game loop can be described as follows:

1. The user triggers an input and the corresponding data is sent to the system space
2. The system space manages the data, performs all the required calculations, and generates abstract data as a result
3. The abstract data enters the story space and is given context
4. A collection of graphical and audio responses are triggered as a result
5. The story space data is transmitted to the player's sensory organs (eyes, ears, etc.)
6. The player's sensory organs send the data to their brain where it is processed in different ways
7. The resulting impressions of the player are fed into the current mental model
8. The mental model is updated with new information
9. The player uses the updated mental model to consider the outcomes of various scenarios, to help determine the next appropriate action
10. With a plan defined, the brain sends commands for the user to trigger the game's input

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- https://en.wikipedia.org/wiki/Mise-en-sc%C3%A8ne

System, Story, Mental Model *(SSM framework)*

- A contextual example of the SSM game loop:

1. The player presses an input to fire their character's gun
2. The trajectory of the fired projectile is calculated, collision detection is performed, and hit points are subtracted from the object – causing it to enter the 'explosion' state
3. UI text is changed to output the damage value of the collision, and a sound is triggered by the 'explosion' state
4. The projectile is animated as a flying bullet and can be seen colliding with a barrel which causes a particle effect and sound effect to play
5. The player sees and hears the barrel exploding as a result of the collision
6. The player recognises the bullet and the barrel, and identifies the collision between them as the cause of the explosion – triggering satisfaction
7. For the first time, the player witnesses the bullet causing the barrel to explode
8. The player is now aware that shooting barrels with bullets will cause satisfying explosions
9. With the goal of destroying as many barrels as possible, the player considers the outcomes of shooting more barrels and identifies this will bring them closer to their goal
10. The player's brain sends signals to their hands to trigger the relevant inputs in a way that should cause their character to shoot more barrels and trigger more explosions

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- https://www.diva-portal.org/smash/get/diva2:1089785/FULLTEXT01.pdf
- https://en.wikipedia.org/wiki/Mise-en-sc%C3%A8ne

Sweetser's Model of Gameflow

- Emphasises the singular importance of player enjoyment
- Flow is *"so gratifying that people are willing to do it for its own sake, with little concern for what they will get out of it, even when it is difficult or dangerous."*
- Eight elements that define 'optimal flow'
  1. A task that can be completed
  2. The ability to concentrate on the task
  3. Concentration is possible because the task has clear goals
  4. Concentration is possible because the task provides immediate feedback
  5. The ability to exercise a sense of control over actions
  6. A deep and effortless involvement that removes awareness of frustrations external to the experience
  7. Self-concern dissipates, but 'sense of self' emerges stronger than before
  8. The sense of duration of time is altered

- https://www.scinapse.io/papers/2108682032
- https://openresearch-repository.anu.edu.au/bitstream/1885/216736/1/OzCHI20_GF2020-1col.pdf