

# SO, WHAT IS SO IMPORTANT ABOUT GAME MECHANICS? GAME DESIGN ESSENTIALS: SYSTEMS, MECHANICS & ACTIONS

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## Resumen

*Durante los últimos años he trabajado como profesor de diseño de juegos en la academia. La docencia me ha permitido evaluar lo complejo que puede ser comprender algunos conceptos relacionados con el diseño de juegos, especialmente para aquellos estudiantes que están en los primeros semestres de una carrera afin.*

*Por consiguiente, la intención principal del artículo es proporcionar a estos jóvenes creadores de juegos, y sus profesores, un modelo educativo de andamiaje para la comprensión de la terminología básica del diseño de juegos, específicamente: sistemas de juego, mecánica de juego y acciones de juego. Creo firmemente que este es un asunto importante, especialmente para aquellos estudiantes que no tienen un conocimiento previo sólido sobre literatura de diseño de juegos y necesitan trabajar en tareas de aprendizaje complicadas, como escribir un GDD (Game Design Document) o la revisión y crítica de un juego como caso de estudio.*

## Palabras clave

*Diseño de juegos, estudiantes, andamiaje, sistemas de juego, mecánica de juego, acciones de juego.*

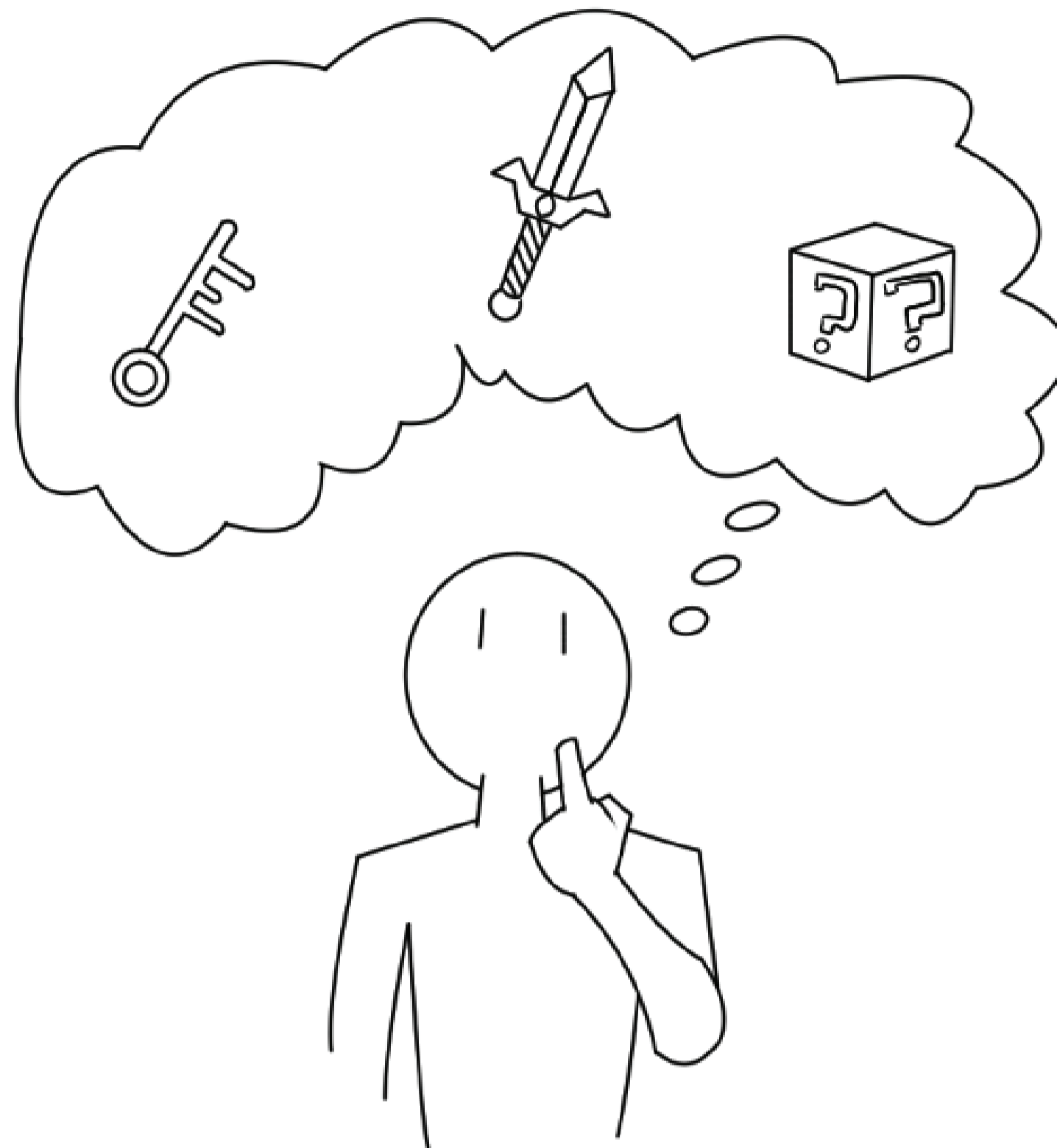
## Abstract

*Over the last few years, I have been working as a game design professor in an academy. Teaching has provided me with insight on how understanding some concepts related to games design might be complexed, especially for students who are in their first semesters of a related degree.*

*In this regard, this article seeks to provide these young game creators and their professors an educational model scaffolding for the understanding of basic game design terminology, specifically: Game Systems, Game Mechanic, and Game Actions. I strongly believe that this is an important topic, especially for students who do not have a strong prior knowledge about game design literature and need to work in complicated learning tasks, such as writing a GDD (Game Design Document) and the review and criticism of a game as a case of study.*

## Keywords

*Game design, students, scaffolding, game systems, game mechanic, game actions.*



## The team behind this article

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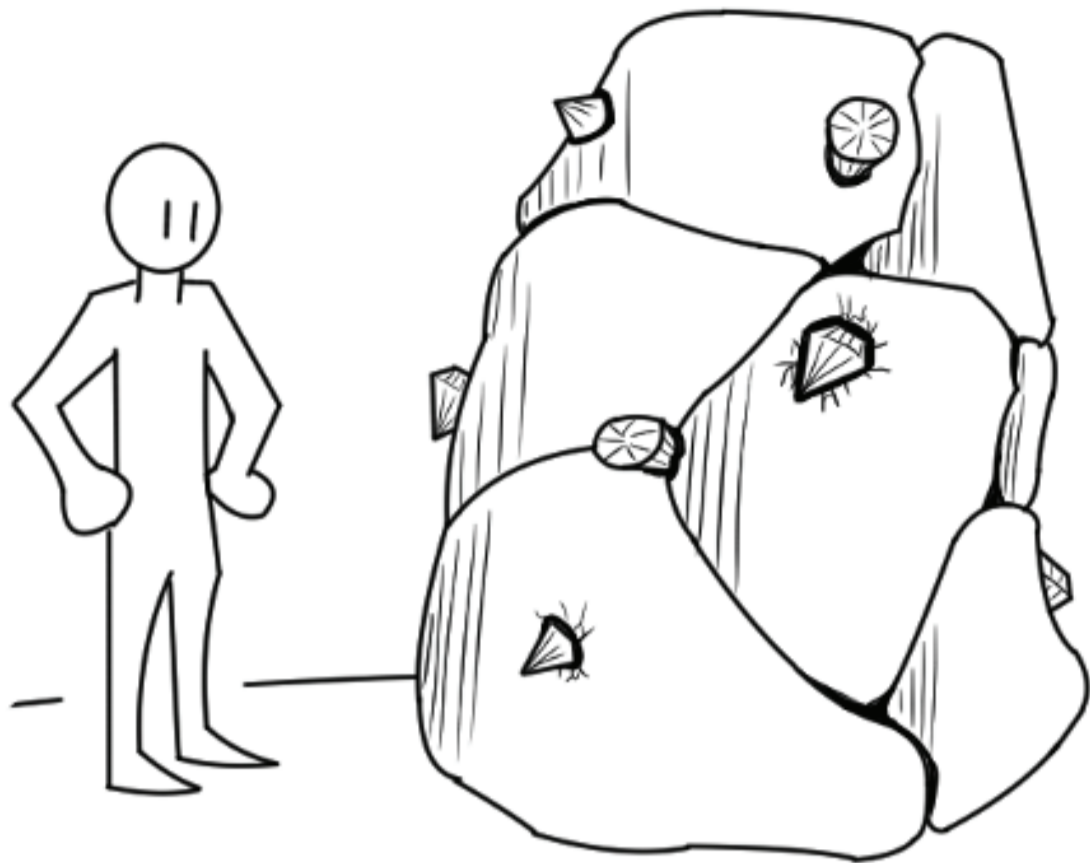
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## Context

Do you want to create games? If it is so, it is highly improbable that you haven't heard about the term Game Mechanics before; but what exactly is Game Mechanics?

Games are complex "entities," they are the result of a creative process of applied design. However, Game Design still remains a new field of knowledge, and as such, its frameworks, taxonomies, and terminology are still unfolding.

Another vital issue regarding video games is how intertwined the academia, industry, media, and consumers are. This close relation tends to lead to confusion: One of the prior mentioned stakeholders would use a term with some meaning, while others would understand it differently.

Game Mechanics is one of those misunderstood, misused, and broadly referred to terms. How can aspiring game creators (just like you!), with formal training in Game Design, should address this problem?

This short article aims to give some insight into the problem of what Game Mechanics is, and how important it is. So, let's get started!

## Analysis

As in any other problematic topic, first and foremost, it is crucial to review the works and writing of "the

elders" AKA, the more experienced game designers and educators.

*"... game mechanics or on how the game is played."* (Björk & Holopainen, 2005)

*"One of a game designer's tasks is to turn the general rules of the game into a symbolic and mathematical model that can be implemented algorithmically. This model is called the core mechanics of the game."* (Adams & Rollings, 2006)

*"... the interactions (Game Mechanics) that change the state of a game. There are essentially three kinds of mechanics - actions, constraining and conditional rules - and their operations form the basis of loops, and therefore dynamics".* (Kelly, 2006)

*"Mechanics: These are the procedures and rules of your game. Mechanics describe the goal of your game, how players can and cannot try to achieve it, and what happens when they try."* (Schell, 2008)

*"... The rules of a game. Common non-digital mechanics include trick taking, turn taking, rolling a die, and moving. Examples of mechanics from video games are running, jumping, and shooting."* (Brathwaite & Schreiber, 2009)

*"Game mechanics are methods invoked by agents for interacting with the game world."* (Sicart, 2009)

*"Video game mechanics are objects that create gameplay when the player interacts with them."* (Rogers, 2014)

*"Players initiated actions from controllers' inputs as designated by the game designer. These actions have effects on the gamestate in terms of variables and dynamics of the gameplay system."* (Terrel, 2011)

*"... core game mechanics define the player's principal abilities in the game."* (Solarski, 2017)

OK, maybe now you are thinking "but those definitions don't resonate with me. There aren't any other younger designers, who have tackled this issue." Well, yes, but also no, at least in the sense of "formal and traditional" sources of knowledge, such as books, conference talks, and/or well-organized blogs.



For this very reason, we started a discussion via Twitter <sup>1</sup>. There were some related discussions<sup>2</sup> that started because of the original post. An example is the article Game Mechanics vs Player Practices

written by the well-known designer and expert Daniel Cook (2020), while the discussions were taking place. The following extracts are some of the definitions that sprung from twitter:

*... it's a difference of scope. A mechanic is an individual element of how the game works (i.e. damage reduced by armor mitigation), whereas the system encapsulates many interwoven mechanics (i.e. damage system: healing, resistances, types, DoTs, etc.). (Williams, 2020)*

*I define a game "mechanic" as a self-contained system in a game. It can interact with other systems/mechanics, but could also be removed without breaking them or work fully without any other systems. (I find this is the most useful definition, not necessarily the most accurate.) (Appaloosa, 2020)*

*... Game Mechanic to refer to a gameplay action the player can do (ex: Combat Parry Mechanism). Game System is used either for a "set of gameplay rules" (ex: Game Mode rules) or a "technical gameplay system" (ex: Aggro System for AI). (Allançon. 2020)*

*A mechanic is a pre-defined decision players must make to reach the main goal of the game.  
A system is a group of such decisions functioning together as 1 (crafting,*

*inventory, economy, class spec). You can have a game without a system but not without a mechanic. (McDonald, 2020)*

*Games are made of systems (hopefully elegantly intertwined) Systems are made of mechanics. (Trepanier, 2020)*

Now, upon finishing to examine the references, it is time to move on to the second part of the analysis, it's vital to remember: Games are complex systems, and as such, they need the coordinated synchronous action of interrelated elements; no single part can replicate what the system, as a whole, can do.

From a high-level standpoint, if we wanted to represent the functional aspect of a game, it goes Systems > Mechanics > Actions.

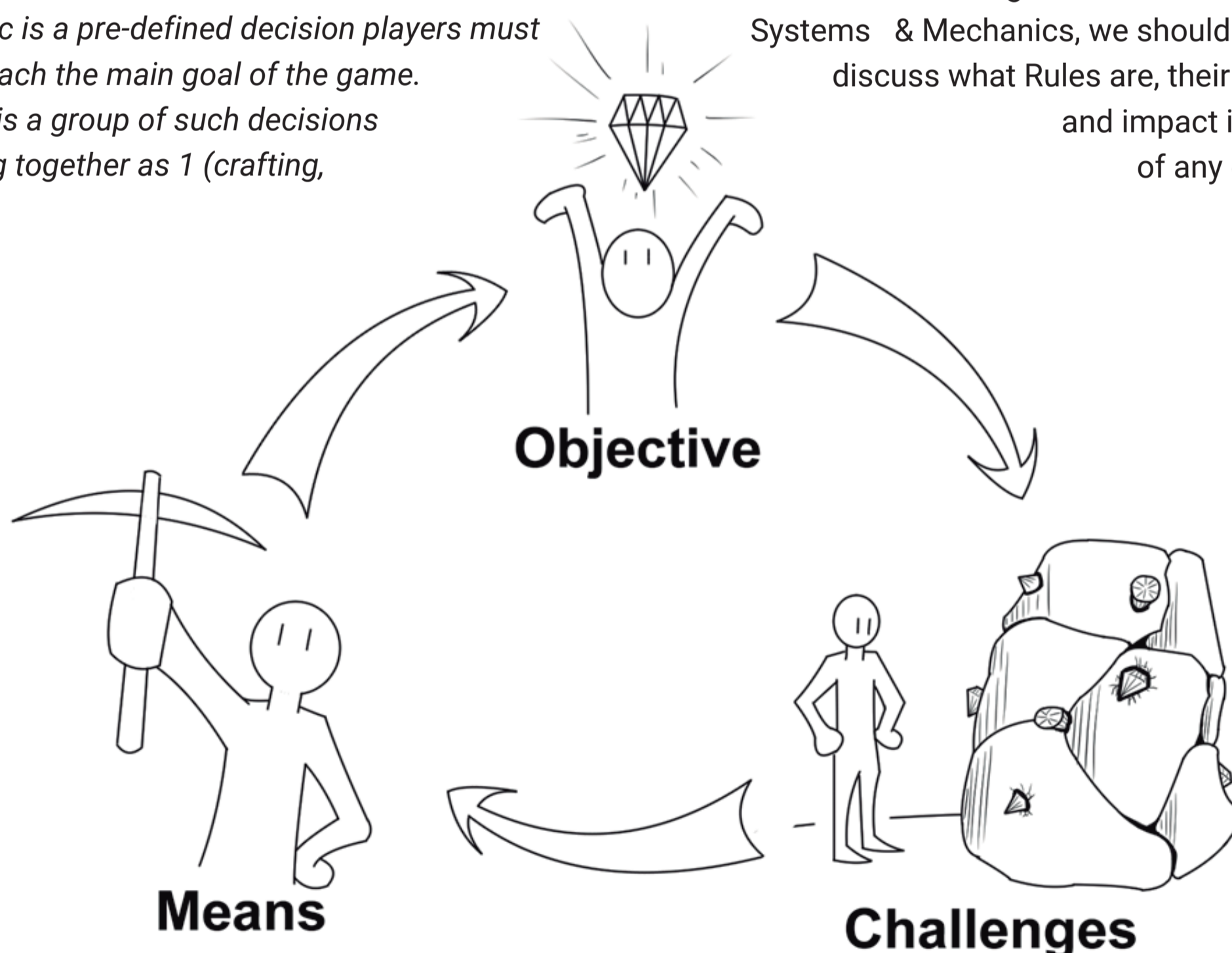
Game Systems are the machines that designers build as an answer to the Big 3 Questions of Game Design, also known as the Basic Game Design Triad:

**Objective:** What do the players want to achieve?

**Challenges:** What obstacles block the player's pursuit?

**Means:** How will the player overcome the barriers and which "tools" will be used with that goal?

Before continuing to define in more detail the Systems & Mechanics, we should take time to discuss what Rules are, their importance, and impact in the design of any given Game.



<sup>1</sup> You can read the discussion here: <https://bit.ly/37TZaxS>

Rules is another of the Game Design fundamental terms which have been explored by different authors in a myriad of books, articles, and papers. However, as important as they are in Game Design, still they aren't the center of this article; the main reason is that, in the informed opinion of the author of this article, aspiring designers tend to have a better grasp of the key features of a Rule.

However, what are Rules? For the purposes of this article, we will understand Rules as laws that govern the Games' space. Any game has its own Space, composed by Time and a Morphology, which often are simulation or a simplification of a player's own Space, as examples:

- Tic-Tac-Toe Morphological-Space is a 3 by 3 orthogonal grid (9 cells in total), and an Asynchronous Time-Space, defined by turns, with a duration between 4 and 9 turns.
- Tetris also has a Morphological-Space defined by an orthogonal grid, of 10 by 20 cells; Its Time-Space understood as "Real-Time", defined by computer tics and screen refresh ratio (in latest iterations of 60 frames per seconds).

But defining which are our Game Spaces is one half of how we define the Rules of any given Game; then What is the other half?

By cross-referencing the Basic Game Design Triad with Space (both morphological and time) restrictions we have our Rules, which can be explicit, as in traditional analogue games, or implicit, as in video games. Then for the purposes of this article, we will understand Rules as the Design constraints that work as guidelines for any game.

Now that we have discussed what Rules are, it's time to go back to the main topic of this article: Game Systems, and Game Mechanics.

Game Systems are somehow invisible to the player, maybe that is why the term isn't as overused as Game Mechanics.

Game Mechanics are the concrete operations allowed by the Game Systems. Mechanics define the universe of choices that players have at any given time, giving context to players' sense of agency.

Game Mechanics always interact directly with the player. This does not mean that all Mechanics in a Game are under the player's control.

Finally, the Game Means are represented by concrete Actions performed by the player. These Actions are restricted by the Game Mechanics where it's nested, and by the complexity of the Game Systems.

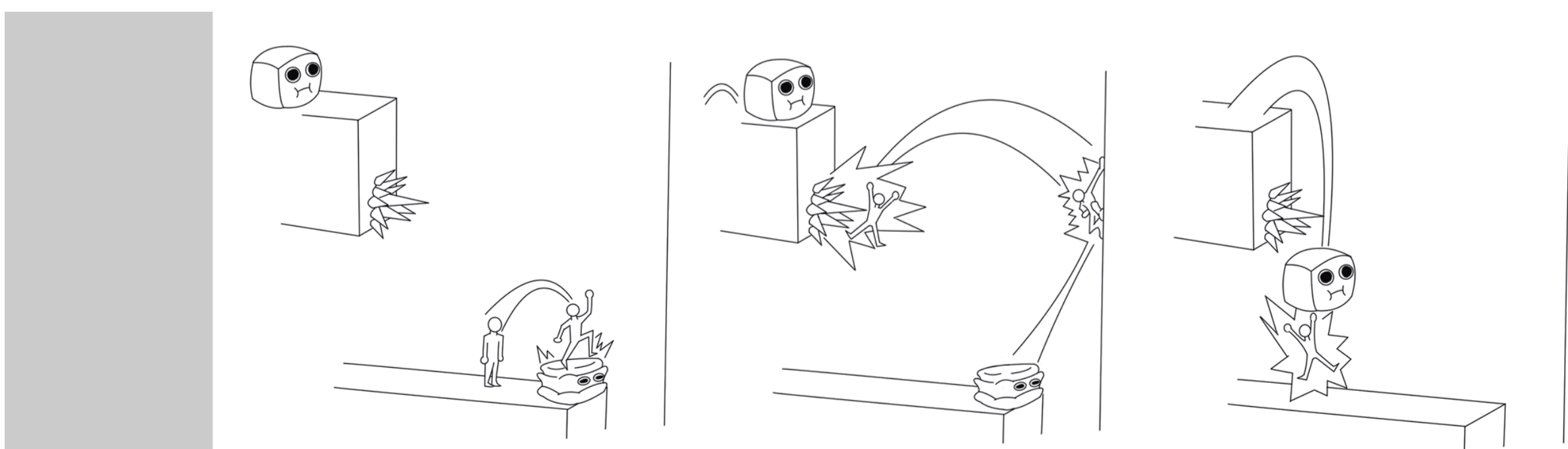
It's reasonable to say that Actions are the granular elements of the game interaction between the Game and the Player, referred by some authors as Verbs.

Now that we have a grasp of how games work, from a macro perspective, we will put this new knowledge into practice by working with some examples.

## Theory into action

As we said, it is easier to understand everything previously reviewed with a concrete example, through the analysis of a hypothetical case. Let's assume that a Platformer Game is being designed, and the following scenario is described:

*The player runs from the left to the right side of the stage to an opening above the platform. An enemy is blocking the player's path who jumps and kills the foe by landing over it. Taking advantage of the momentum gained by stopping over the enemy, the player reaches a wall at their right, from where they bounced. The last wall-jump was a mistake, the player hit a spikes group that was on the wall, resulting in health being lost. The player is again on the floor; new damage is sustained, from another enemy landing over the player.*





The prior scenario requires the following structure so the game experience is able to take place.

#### Systems:

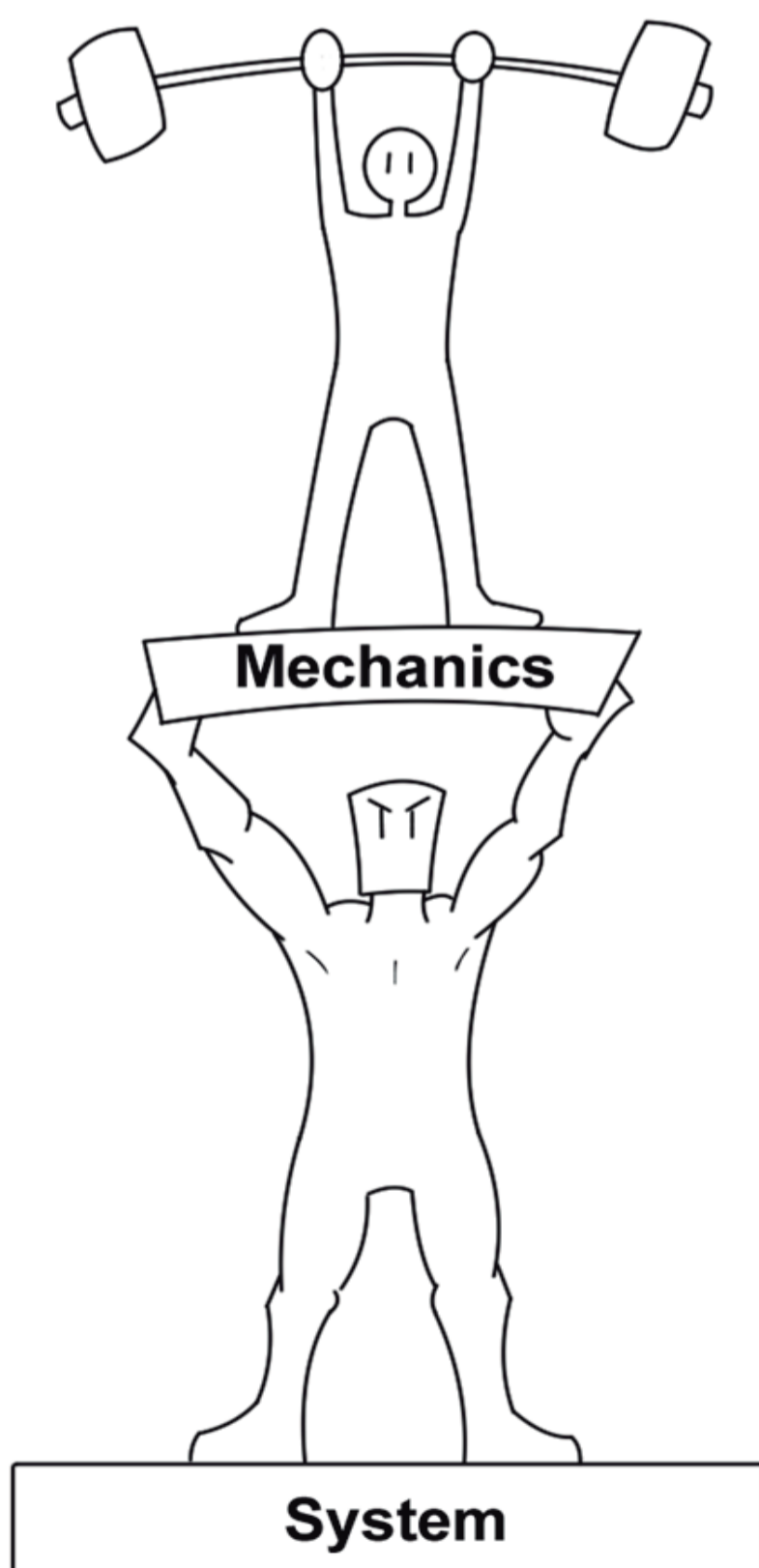
- Movement; for both the Player and the Enemies.
- Combat / Health; again, for both the Player and the Enemies.
- Enemies; mostly related to their behavior and, if applied, their AI.

#### Mechanics:

- Jump-kill; nested in both the Movement and the Combat Systems.
- Wall-jump; nested only in the Player's Movement Systems.
- Hazards (Spikes); nested in the Player's Combat System.

#### Actions:

- Traverse; action available to both the Player and the Enemy, but not necessarily based on Mechanics.
- Jump; available for the Player. Depending on the context will be related to the Jump-kill and the Wall-jump Mechanics.
- Attack; always related to Mechanics nested on the Combat System.



The previous analysis simplifies a variety of aspects of a Platformer Game, the most relevant ones are:

- The enemy can perform a Jump-Kill Mechanics, however, they cannot jump; How is it possible? The Enemy landed over the Player, but this was the result of a Traverse action which led to a fall when the Enemy kept traversing over the platform's edge.
- There are many common systems not described in the example, such as Time, Score, Lives, etcetera.
- We can't know the depth of the Combat System. Can the Player block, perform a parry or a counter, what about a combo and/or a special attack?

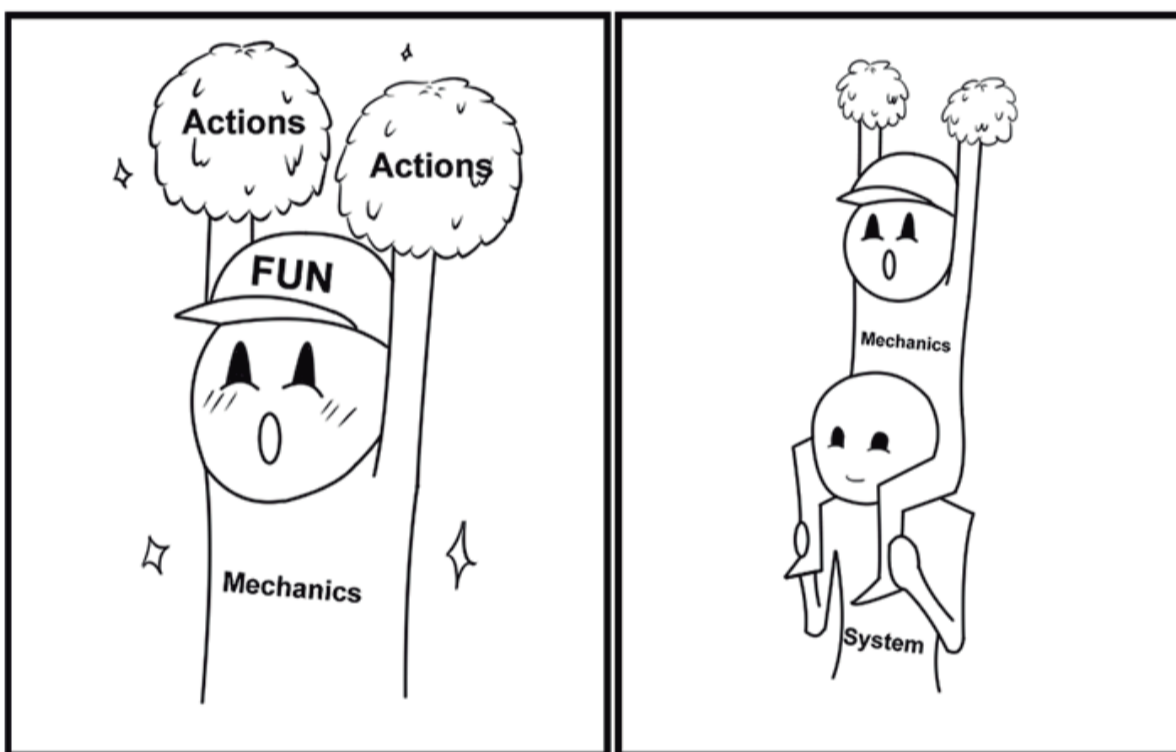
These three previous inquiries regarding the hypothetical scenario don't cover a potential myriad of design concerns but should be enough for the purpose of this article.

We suggest aspiring Game Creators come up with their own hypothetical scenarios to apply this model, or even better to analyze their own Games and Prototypes using this lense. If these young designers, for any reason, don't think their own scenarios or Prototypes are robust enough, then our advice is to try to practice by selecting "slides" from games they enjoy.

## In conclusion

- The term Game Mechanics has multiple, but similar, definitions. This lack of a standardized meaning often leads to the misuse of the term itself.
- Many authors have defined what Game Mechanics is and what their purpose is. Review them! This will help you to have a better understanding of the mechanics-related design problems, and to find a better answer to each case.
- It is essential to have a clear vision of the game as a whole, to correctly define its Mechanics.
- Define Game's Basic Triad. What does the Player try to achieve? What is blocking the path? How can this problem be overcome?

- Once the prior questions are answered, restrictions to the operations must be defined. These restrictions are our Rules.
- With the High-Level Vision of the Game clearly defined, it is time to describe some crucial scenarios that can be seen as a representative moment of the Game Experience. It is even better if these scenarios have images as visualizations.
- Game Mechanics are not isolated elements; they are held by Game Systems.
- Game Mechanics allows players' Actions, which are the concrete ways of how Game Means are applied to overcome the Challenges presented by the game.
- A Game Mechanic interacts directly with the player. but not always are under the player's command.



## Potential problems and shortcomings of the presented Model

Before reaching the end of this article, we believe it is relevant to state once again: there isn't a common agreement of a definition of what a Game Mechanic is, and the same can be said to less extent regarding the Systems, Actions, and Rules. This means, as we previously mentioned, that is important to review other Designers, Researchers, and Educators' works.

This model has worked well on the author's experience as a teacher and mentor of the game industry's young professionals in Chile where the local ecosystem is still developing, and where most studios are small or midsize.

Under these two restrictions would be important to note that the reader should apply or not this model if they find it useful on their day by day design needs, or for their educational-related assignme.

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