

“We don’t stop playing because we grow old; we grow old because we stop playing.”

George Bernard Shaw  
Writer, Political Activist

## V. GAME DESIGN ELEMENTS

Now I would like to introduce you to two cool concepts as game design elements: elemental tetrad and weirdness trio. It's challenging to pull together so many different aspects of art and design into creating an experience, a game experience. The elemental tetrad is introduced by Jesse Schell in his book: "The Art of Game Design" and it serves as a framework for arranging these constituent parts (Schell, 2008). The more you know about your art, the better it will be, so use it as a tool to enhance the essential experience you want to create. While the weirdness trio binds the strange, fictional of your game story. Figure 10 indicates the elemental tetrad, while the weirdness trio is indicated in Figure 21.

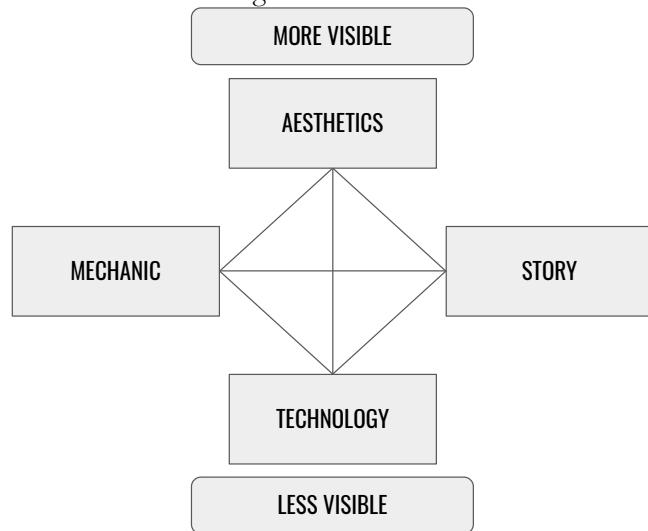


Figure 10. Elemental Tetrad; the four elements of game design: Mechanics, Aesthetics, Technology, and Story.

## 5.1 Elemental Tetrad

Like other types of art, a video game is merely a means for delivering an Experience. That experience is the foundation of all fun and engaging games. Someone has a unique experience when they play a game. The elemental tetrad can be used to fine-tune a game's various elements into a harmonious whole. The player's experience in the game depends on each of these elements. Let's create a challenging, scary game, for example. Even if the mechanic itself was effective, the game wouldn't be scary if it was filled with bright, cheerful colors (aesthetic aspect). There is a strong connection between all four elements of the tetrad. The game's mechanics should be coherent with the plot. The mechanics ought to be strengthened by technology, and so on.

### 1. Mechanics

These are the procedures and rules of your game. A game's mechanics outline the rules for how the game is played, what happens when players try to accomplish the game's stated objective, and what consequences they face if they fail. The mechanics of a game are the set of rules and procedures that players must follow to progress through the game and achieve its goals. The game differs from mediums like comics, movies, or toys because of the element of mechanics and their vital role in complementing other elements of aesthetics, story, and technology (Ahmad, 2019). For example, the design of your game allows your player to move to a certain space. How would you define the procedure to allow your players to do that? Do you roll the dice to determine the value, use an available action point from your character's pool, or press the arrow button at will?

There are tools to help you design and simulate the game mechanics. Machinations.io, a web-based mechanics simulator, can simulate the input and consequences of the mechanic variables. Therefore, you can quickly observe and adjust the stats. Many designers are still using Ms. Excel sheets, which is enough to learn the game dynamics in their games. The screenshot of Machinations.io is shown in Figure 11.

## GAME STARTUP MANUAL: GAME DESIGN [DRAFT]

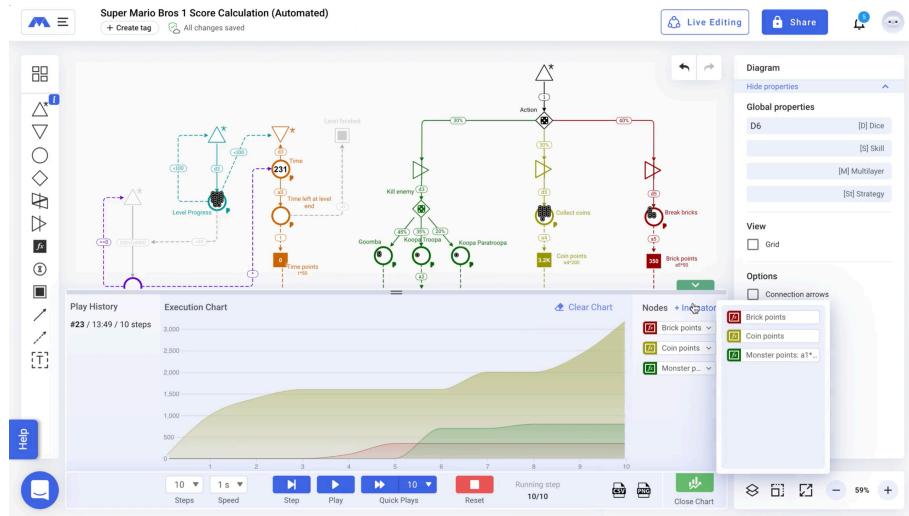


Figure 11. Machinations.io is a web-based tool to simulate game economics and game system. The aim of using this tool is to predict the behavior of your designed mechanisms.

## 2. Story

There is a concept of project management in reaching specific priorities or goals called the project triangle. Three corners in the project triangle: quality, time, and cost. Prioritizing high-quality product have a consequence for a long time and higher development cost. On the other hand, if you prefer the shortest development time, expect to loosen the quality and more expenses. While prioritizing a low-cost means lowering the quality and adding a development timeline. Typically, we can choose up to two corners in a service project. Except, you are in a big AAA company. For example, if you produce a high-quality product within the budget, you may have to extend the timeline. Consider choosing up to two over three priorities in the business parameter of game development. See Figure 12 if you want to make a game that has an exclusive quality, you should be fine with the development cost and time.

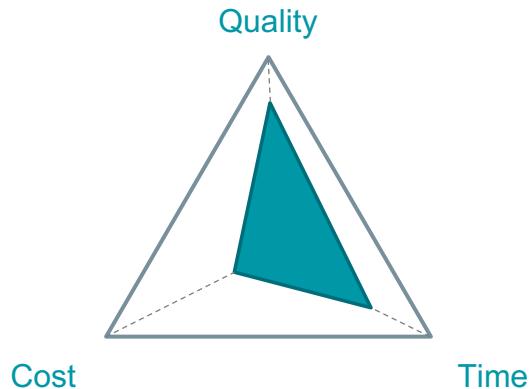


Figure 12. The project triangle: high-quality, efficient cost, and effective timeline.

The game story could be linear and pre-scripted, or it could be branching and emergent. You should pick only one corner of the weirdness triangle (Figure 12), in contrast to the production triangle, where you can have up to two priorities. Prioritize more than one weirdness in weirdness triangle, and you risk alienating your players. In video games, the “game story” is the sequence of events that play out from beginning to end. The process at hand could be predetermined and linear, or it could be emergent and bifurcate. In games, the mechanics play a significant role in setting the stage for the story’s development and progression. For instance, the game This War of Mine as shown by Figure 13, tell us about the dilemmatic decision. The game’s story is about a war victim who tries to survive. The game’s goal is to stay alive until the end of the war. The player is responsible for keeping everyone in their home healthy, rested, and, frankly, alive. Items and workstations can be crafted to advance, providing new items to craft. Often the player will be provided with difficult options. For instance, a) you can steal a piece of bread from your neighbor and give it to your family member so that they can survive, but it will make your neighbor die, or b) you can be an idealist and be honest, but you will struggle to survive in the next few days.



Figure 13. This War of Mine. The game's story is about a war victim who tries to survive. Meaningful decision-making engages the player experience better.

(This screenshot is taken from <https://toucharcade.com/2019/03/27/this-war-of-mine-stories-fathers-promise-review/>)

### 3. Aesthetics

The appearance, sound, scent, flavor, and sensation of your game are all important factors in its design. Aesthetics play a crucial role in shaping the player's experience, as they impact how the game's world looks. Given their direct impact on the player's satisfaction, aesthetics are considered a highly significant aspect of game design. Using advanced visual technology can enhance the game's aesthetic features, allowing players to fully immerse themselves in the plot and feel connected to the game. In Legend of Zelda: Breath of The Wild as shown in Figure 14, I was shocked when I knew we could climb the apple tree and use it as a consumable item. For me, that is a beautiful mechanism made by the designer.



Figure 14. Link from Legend of Zelda climbs a tree. Not only the graphics is awesome, but the micro actions the main character can do is also surprising.

(This screenshot is taken from <https://gameup24.wordpress.com/2017/02/15/link-looks-at-frogs-plays-baseball-and-dies-in-the-legend-of-zelda-breath-of-the-wild/>)

#### 4. Technology

The medium in which the aesthetics take place, the mechanics will occur, and through which the story will be told is technology. The element of technology means the set of tools, resources, and know-how required to make the game a reality. Any form of these elements, including crayons and duct tape utilized in your first prototype, is related to technology. It is in the medium of your game that you implement technological aesthetic aspects. The game's final outcomes are extremely dependent on the technology being used. The most notable video game engines are Unity, Unreal, CryEngine, O3DE (Lumberyard then), Godot, Construct, and RPGMaker (see Figure 15 to 20). In a physical board game, paper and pencil, plastic chits, or wooden tokens are the technology. The technology you select for your game determines its capabilities and limitations.



Figure 15. Unity3D engine by Unity Technologies.



Figure 16. Unreal engine, a C++ game engine

The engine supports 2D and 3D game development with C# programming language.  
<https://www.linuxadictos.com/en/the-unity-game-engine-already-has-a-build-for-linux.html>

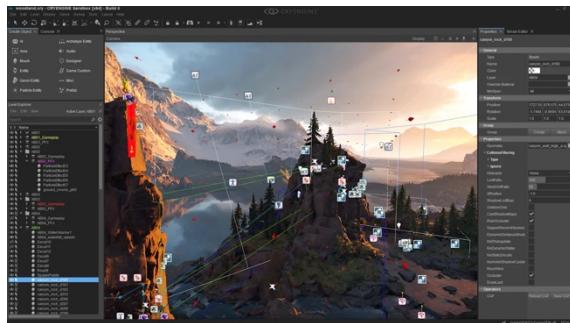


Figure 17. CryEngine by Crytek, written in C++, Lua, and C#.  
<https://www.crytek.com/cryengine>

developed by Epic Games.  
<https://cuevadelobo.com/como-usar-unreal-engine-tutorial-en-espanol/>

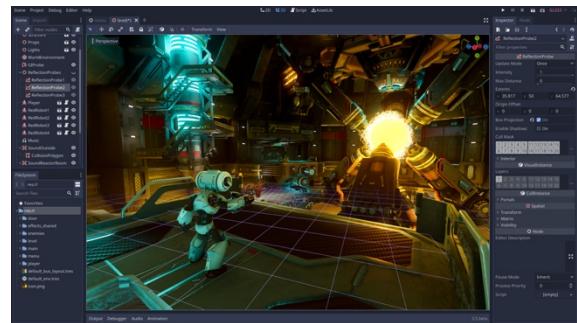


Figure 18. Godot engine, a 2D and 3D open-source game engine. Uses GDScript, C#, and C++.  
<https://github.com/godotengine/godot>



Figure 19. RPGMaker, an engine to create 2D RPG.  
<https://rpgmakermvtutorial.com>



Figure 20. Construct3 game engine, a visual scripting game engine. Programming language: Javascript.  
<https://bitlabs.id/blog/apa-itu-construct-3/>

Note that the element of technology is less visible, while the aesthetic is more visible to players. Players likely won't care about the game engine you use to make the game. In the elemental tetrad, you may design your game dominants on one or more elements, but it is never hard to accomplish all of them. However, look at The Legend of Zelda: Breath of The Wild. This game's elements are so strong in any element, either mechanic, story, aesthetic, and even the technology used. This game is a masterpiece.

## 5.2 Weirdness Trio

The second concept I want to introduce is the triangle of weirdness, or I like to call it the weirdness trio (see Figure 21). The weirdness trio binds the weirdness of activities, characters, and game world. The weirdness trio is used to help you build an interesting narration for the player. Something weird or extremely insane happens to one or more elements of the game.

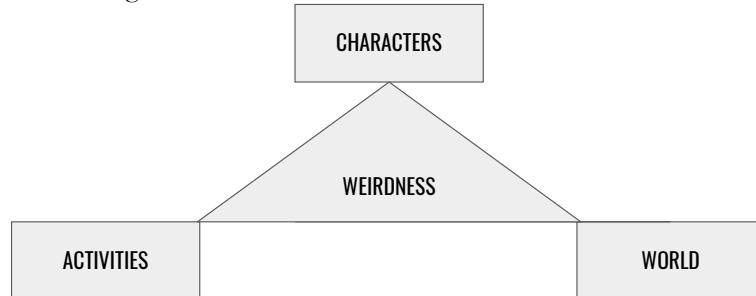


Figure 21. Weirdness Trio; the three elements of weirdness in game design: characters, activities, and game world.

The player is curious and interested to know the conflicts that happened in the game story. It is easier to create weirdness in these areas:

### 1. Activities

Activities weirdness means there is something abnormal happening related to the activity we do on a daily basis. For example, in the action-adventure platform game Mirror Edge, you play as a protagonist with a first-person perspective and adventure from one city building to another (see Figure 22). You attempt to overthrow crazy rich corporations who govern the city. You need to complete a series of levels that involve performing acrobatic maneuvers, like parkour or freerun. There are two kinds of activity weirdness actually in this game. First, there is something fishy about the conglomerate and the networks, so you, as the main character, try to save people's lives through your action. Secondly, parkour is also considered a new sport founded by David Belle around 2000. Therefore, the sport of parkour is considerably new and strange, yet it is so interesting. In summary, the weirdness can be an in-game activity or real activity while the player playing the game.



Figure 22. Mirror Edge from Electronic Arts.

(This screenshot is taken from ea.com)

## 2. Characters

In the game of Resident Evil franchises, people turn into scary zombies. Some zombies can be defeated easily, but some will give the player nightmare. The non-playable character turns into a zombie because it is infected by some virus and easily transmitted by blood or wound. The disease transmitted by blood is actually not new in our daily medical field. However, turning into a zombie is surprising. The weirdness may also happen to the player's character. For example, in the Spiderman game, your character was bitten by a rare spider, which gives the character ability to produce a spider web from the body. Although there are some versions of how Spiderman can shoot the web, either naturally or artificially, using a tool in his hand. Look at Figure 23 and 24.



Figure 23. Resident Evil IV by Capcom Asia.

(This screenshot is taken from playstation.com)



Figure 24. Marvel's Spider-Man: Miles Morales by Sony Interactive Entertainment

(This screenshot is taken from playstation.com)

## 3. Game Worlds

Weirdness can also happen in the game world. In Horizon Zero Dawn, for example, people are represented as disparate, primitive tribes with wildly varying levels of technology. It takes place in the 31st century, after the end of the world, in a post-apocalyptic America. Robots were created by our forefathers' technological civilization. Massive robotic creatures rule the planet, and humans coexist with them in peace. However, a peculiar phenomenon known as "Derangement" has turned animal robots into violent monsters. It appears that larger, deadlier animals have emerged. You take on the role of the protagonist, fighting monsters and stealing their machine parts. See Figure 25 for the screenshot of Horizon Zero Dawn.

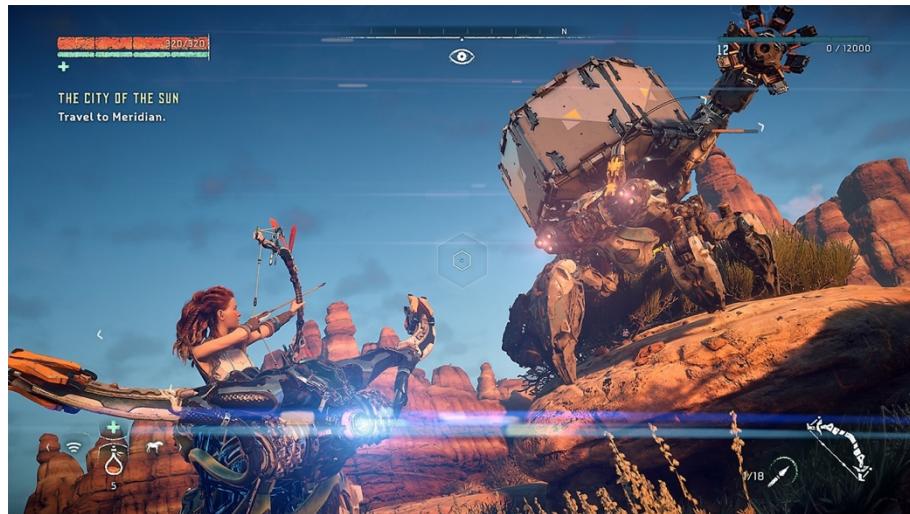


Figure 25. Horizon Zero Dawn.  
(This screenshot is taken from [playstation.com](http://playstation.com))

Kingdom Hearts is one example of a game with almost all dominant elements of weirdness, either activity, character, or game world. The characters crossover from different games or cartoon TV shows in this game (Disney). The game characters gather from different universes, implying the game world's strangeness. You can play actions by using the card on your hand, which is unique because there are not many games using the mechanics for such an action genre. Figure 26 shows the characters of the game.



© Disney. © Disney/Pixar. Developed by SQUARE ENIX

## GAME STARTUP MANUAL: GAME DESIGN [DRAFT]

Figure 26. Kingdom Hearts III + Re Mind DLC edition. You can clearly see the characters in this game are crossed from different intellectual property, such as Monster Inc, Micky Mouse, and Donald Duck's Disney.

(Taken from <https://store.epicgames.com/en-US/p/kingdom-hearts-iii>)