Game Analysis of Minecraft

Written by
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Figure 1. Minecraft viewed from above, 2021, by Magnus Furberg.

Preface

The intent of this game analysis is to dovetail my research statement with Minecraft, instead of explaining what Minecraft is. Gameplay features are described at a basic level. If a more detailed explanation on Minecraft is sought, some references are: *Minecraft Review* (Gallegos, 2011), *Thinking of Returning to Minecraft? Here's what you need to know* (Amenabar, 2019) and *Java Edition Version History*.

Despite Gallego's review being outdated, most of the game rules and how the player interacts with them are the same today. Amenabar's analysis embodies recent game updates. In the *Java Edition Version History,* one finds links to detailed pages of all the versions of Minecraft Java Edition.

Central arguments in the analysis revolve around how updates in Minecraft:

- Mimic reality
- Add educational value
- Complement game challenges
- Change core mechanics
- Complement the survival aspect of the game
- Add immersion
- Motivate exploration

For simplicity I categorize resources as blocks (resources placeable in the world) and items (resources with functionality in the player inventory, see Introduction), even though some resources are both (cake).

Contents

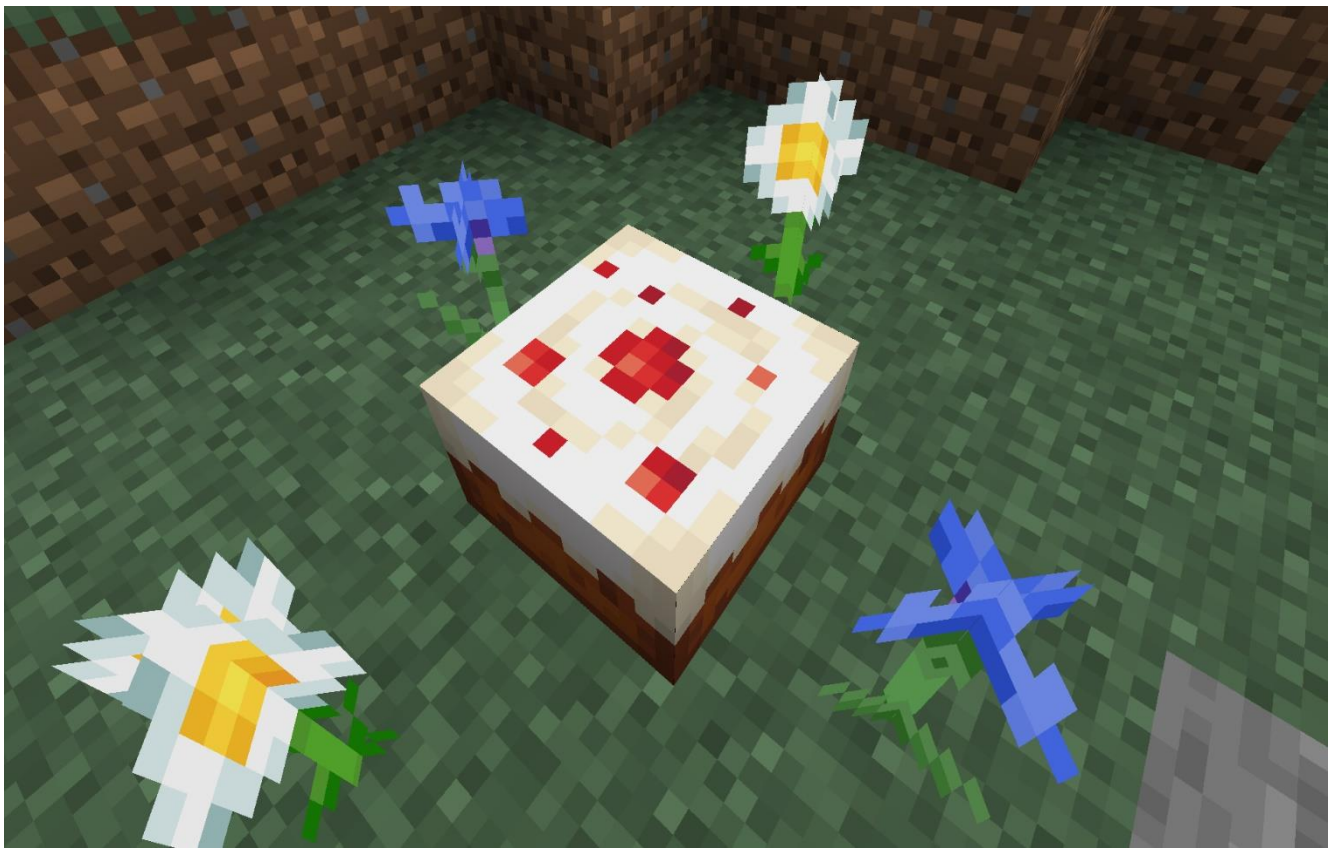

Figure 2. Cake with flowers, 2021, by Magnus Furberg

Research Statement

Select significant updates implemented in Minecraft since the game's Alpha release May 13, 2009 (Wikimedia Foundation, Inc, 2010). How do these updates influence the gameplay based on the previous versions of the game?

In the two sections following the introduction, Minecraft updates are analyzed. Each section is divided into three parts. The focus of the parts is primarily to provide a basic overview of Minecraft's gameplay before the update. Secondarily to inform about the gameplay changes after the update. Finally, to discuss how the update changes the gameplay of Minecraft from the previous version, with respect to different academic theories.

Introduction

> "To improve is to change; to be perfect is to change often" (Humes, 1994, p. 35).

Minecraft is a creative, survival indie game designed by Markus Persson and Jens Bergensten. The game consists of five different gameplay modes (According to Adams, a gameplay mode is a combination of gameplay and user interface) (Adams, 2014, pp. 40-41): Survival, Hardcore, Creative, Adventure and Spectator and comes in nine different versions: Java Edition, Bedrock Edition, Etc. (Fandom, Inc, 2009). This analysis emphasizes the Java Edition and the survival mode.

Creative play defines Minecraft. The player shapes the world as she pleases. Adams explains that creative play refers to play were the player may design or build (Adams, 2014, p. 171).

By collecting resources in an 4x9 interface called the inventory, the player can create new resources or build structures. One can for example collect wood and create planks from wood. Or place the collected wood in the world since wood is a block. Different blocks have different properties and design. Wood for example has a property that allows it to burn and has a design different than stone.

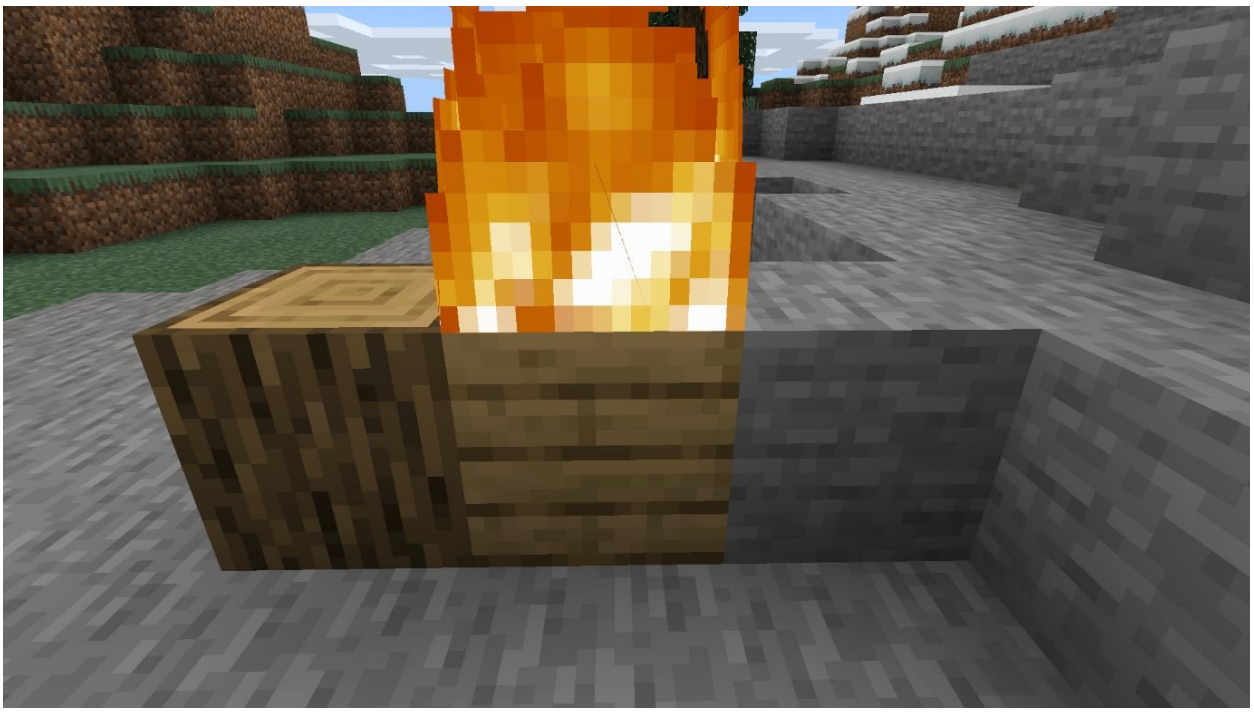

Figure 3. Wood, burning plank and stone, 2021, by Magnus Furberg

In survival mode staying alive complements the creative playing experience. The player has health displayed by hearts and hunger displayed by bird drumsticks. Hunger depletes by player movement and actions. The player receives damage various ways, for example by starving. If the player runs out of health, all resources in the player's inventory are dropped to the ground, and the player can return to life with an empty inventory.

Figure 4. The health and hunger bars, 2021, by Magnus Furberg

An essential challenge the player faces is to manage playing time to conserve life and hunger or die. This statement is strengthened by Adams in the section "Survival and Reduction of Enemy Forces". (Adams, 2014, p. 335).

Beta 1.8 Adventure update

Pre-update

Minecraft Beta 1.7.3 was released 2011, July 8 (Fandom, Inc, 2010). In this stage of the game hunger (see introduction) has yet to be implemented.

- When food items are consumed, health is restored.
- Arrows from bows are fired instantly.
- Bow fire rate is determined by how fast one can click.
- Melee weapons also deal damage as fast as one can click.
- When a creature is damaged by a weapon, the creature travels a distance in the opposite direction from where it is hit from (knockback).
- Weapons have a constant damage and a constant knockback. The player has a constant movement speed.

Post-update

2011, September 14 (Fandom, Inc, 2010), Minecraft Beta 1.8 was released.

- Consuming food items now restore hunger shown in a heads-up display (see introduction) as a bar.
- Several food items are added.
- The player regains health by filling the hunger bar to 90% or more and loses health when the bar is 0% (Fandom, Inc, 2011).
- Bows must be charged to fire arrows. The longer the bow is charged, the more damage is dealt and the farther the arrow travels.
- Sprinting is introduced and activated by tapping the forward button twice. While sprinting the player moves faster, although hunger is depleted faster as well.
- By jumping and hitting a melee attack double damage is dealt (critical hit).
- Sprinting and hitting a creature increases the knockback the creature receives.

Gameplay changes

In the beta 1.8 update the core mechanics change significantly from version 1.7.3. Adams explains that core mechanics define the challenges the player faces, and what actions the player must take to conquer them (Adams, 2014, p.386). To fire the bow the player must now hold the mouse button and release it at a specific timing. The active challenge of firing the bow at the right time is supplemented. If fired too early the arrow travels with reduced speed, a shorter distance and provides less damage and knockback. An Active challenge is defined by Adams to be a type of challenge that establishes consequences related to player interaction (Adams, 2014, p.387).

Figure 5. Charged bow, 2021, by Magnus Furberg

Hunger and eating to regain health as core mechanics transition the game conditions to be more about survival. Different player actions cause varying degrees of hunger. Sprinting and jumping drain the hunger bar faster than walking. Instead of having to consume food to solely replenish health, the player additionally must eat to stay alive.

The active challenge of harvesting food is emphasized. A consequence of bringing too little food to a building project, can result in having to search for food instead of building. Additional food

items are added to complement the implementation of hunger. Adams confirms the former by describing how game conditions determine the cause of an ensuing incident (Adams, 2014, p. 364).

Having knowledge of food sources and how to utilize them rewards the player strategically. A full food bar allows the player to perform more actions and keep a full health bar. Most actions may be performed with a low food bar as well, however the risk of starving is higher. In his book Adams writes that rewarding the player for mastering a challenge, intensifies the player's interest in the game (Adams, 2014, p. 23).

In beta version 1.8, there are no instructions on how to find, cook or utilize food items, even though hunger and eating are a central part of the game. One can say that it is a questionable design to keep this from the player. She must actually die of hunger and lose progress to learn this. Adams states that a game should always provide a tutorial or guidance on how to conquer challenges (Adams, 2014, p. 317).

However, one can argue that hiding the rules strengthens immersion and allows the player to see the game as an alternate world. In "Hiding the rules" Adams describes how explaining all the rules can decrease game immersion. If the player is curious about eating, she can simply try it (Adams, 2014, p.13).

The core mechanics of eating to survive, being able to sprint and having to charge a bow before firing all add to the value of realism. Adams measures realism by how the game associates to the real world (Adams, 2014, p. 520). If a person is critically damaged in real life, healing happens over time. Eating food encourages natural regeneration. Consequently, regenerating health by having a nearly full food bar, instead of healing instantly by eating, adds to the value of realism. One can argue that the value of realism can encourage the player to express themselves in-game. The core mechanic of eating to saturate hunger mimics reality. Since similarity is found between the player and character, it is simpler for the player to identify with the character. The former is

supported by Latorre in his academical journal. He explains how a game is a channel of representation and presents the player with forms of expression (Latorre, 2015, p. 415).

Full release 1.7.2 The Update that Changed the World

Pre-update

In 2013, September 19 (Fandom, Inc, 2010), Minecraft version 1.6.4 is released.

- This stage of the game offers around 20 different biomes.
- There are 2 types of flowers in the game.
- Glass has one translucent color.
- One fish type can be caught by fishing.

Post-update

Minecraft version 1.7.2 is released in 2013, October 25 (Fandom, Inc, 2010).

- The number of biomes is tripled from around 20 to around 60.
- 10 new flowers are implemented.
- Glass can now be colored.
- 3 new fish are added.
- Fishing can now reward the player with treasures and other items.

Gameplay changes

Exploration is a paramount feature in Minecraft. Procedural generation creates every Minecraft world differently. Blocks are connected in varying combinations when a world is generated or explored. However, if there only exist a few blocks and they are repeated continuously through the world generation, the resulting world is repetitive.

Biomes are parts of the world with specific characteristics (Fandom, Inc, 2010). For example, a jungle biome has plenty of tall trees of a specific type. Whereas the trees generated in a plains biome have a shorter height, are scarcer and of another type. By tripling the number of biomes, variety in the game world is enriched.

Mesa (now badlands) and savannah are two of the new biomes. The mesa biome is mostly made up of different colors of hardened clay and red sand. It is possible to craft the clay, however one must find a mesa biome to obtain the red sand. In the savannah biome one finds acacia wood. One must find a savannah biome to obtain this wood. The updated variety of biomes significantly effects exploration in the game. For builders the new biomes offer blocks that contribute to new design in structures. If the new biomes are recondite to the player, the player must explore the world to learn more about them. Adams mentions exploration briefly in his book (Adams, 2014, p. 25).

Minecraft's creative play allows the player to alter the world. Update 1.7.2 enables the coloring of glass. Windows can for example now be colored red. Dyes can be collected from flowers to color with. Therefore, increasing the amount of flower types from 2 to 12, supplements the coloring of glass. These changes add to the builder model of Minecraft. A world that can be altered is referred to as a builder model under the section "World Models" in Adam's book (Adams, 2014, p. 491).

In this update the core mechanic of fishing is transitioned into providing items of three classes. The classes are fish, treasure, and junk. To complement the fishing update 3 new types of fish are added. Instead of solely being a source for food, the player can now fish for different items. Treasures are rarer to catch than junk and fish. Some of the treasures include name tags, saddles, and enchanted books. These items are rare in the game and could only be obtained priorly by looting special chests. The update makes room for a new type of playstyle, were one can progress the game patiently by fishing items, instead of exploring dungeons.

Fishing in Minecraft is a passive challenge. Even though the player's action involves clicking the mouse at the right moment. The water stays in the same place with the challenge of catching

loot. Adams refers this in his book under the section “Passive Challenges” (Adams, 2014, p. 387).

Having more biomes to explore, more flowers to pick, being able to color glass, adding fish and being able to fish items are features that elevate Minecraft’s realism. In real life different parts of the world also consist of different biomes. In Africa one also finds savannahs with acacia trees. Canyonlands National Park, Utah is an example of a mesa. The landscape is colorful, naturally eroded and has flat tops (Wikimedia, Inc, 2003). Minecraft mesas reflect mesas from real life. On the top they are also flat, color variety is displayed by varying layers of hardened clay. And they are slanted outwards to mimic erosion.

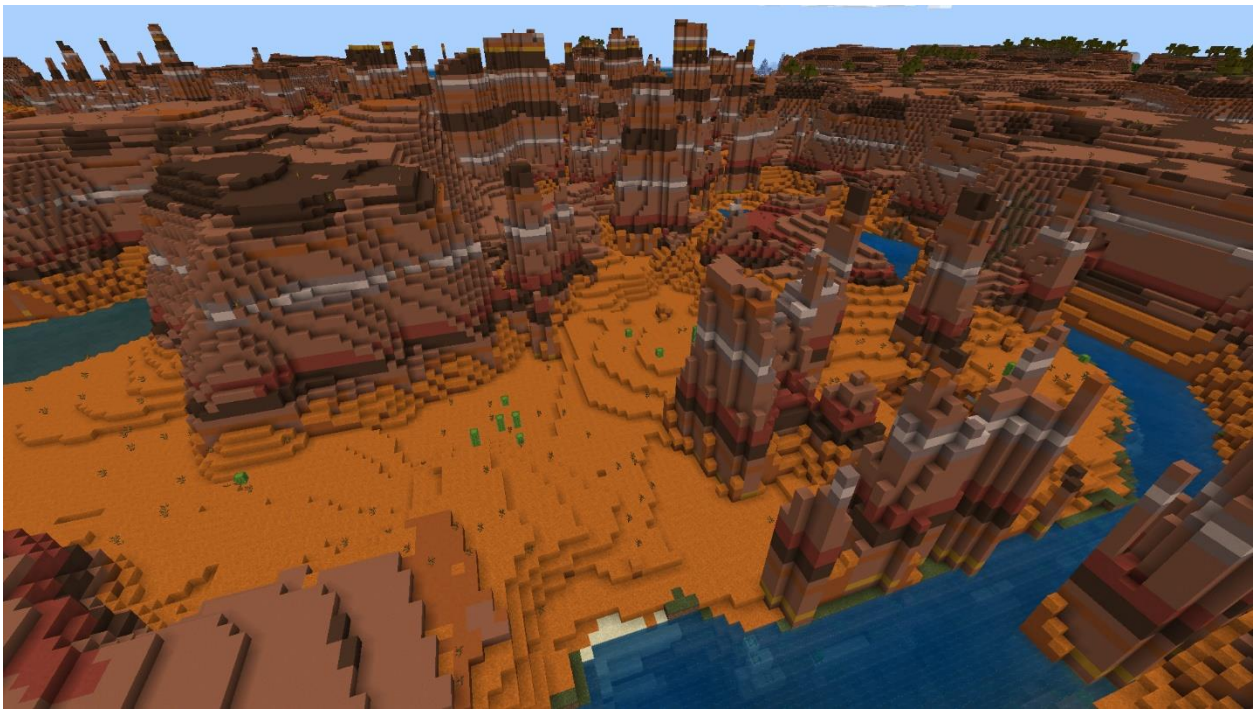

Figure 6. Mesa biome, 2021, by Magnus Furberg

The 10 new flowers create a floral variety that mirror the vast plenum of flowers in real life to a greater degree. All the flowers in Minecraft are based on real life flowers. One example is the poppy. Moreover, all the flowers can be crafted into dyes in-game. In real life dyes are also created from flowers.

The 3 new fish types are copies of real-life fish. Increasing the amount of fish accentuates Minecraft's similarity with the vast plenum of fish in real life. A person who throws a fishing line in real-life occasionally also catches junk. This is reflected as well in this update.

By the former examples of realism added to the game in this update. All the features implemented are simpler impressions of real-life examples. In real life the process of creating dye from flowers consists of more detail than simply clicking a dye. However, dye is still created from flowers. Consequently, this update amplifies the educational value, and improves the environment of which inspiration to learn is invoked through Minecraft's gameplay. The player is educated by a technique called stealth learning. Playing the game educates the player whether she is aware of it or not. Adams explains this process in his book (Adams, 2014, p. 27).

Conclusion

The intent of selecting beta update 1.8 and full release update 1.7.2 lies in the significant and varied gameplay changes both updates introduce.

How both updates evolve Minecraft's gameplay is epitomized this analysis.

- Main points expounded include core mechanic changes. In the case of sprinting the player can now traverse land significantly faster. Instead of having to wait to reach a destination by walking, the player can select a pace.
- Realism is heightened in sundry ways. For instance, by allowing the player to fish junk and several fish types. This is important because the game is consequently concatenated with the real-life world. Immersion is also accreted by the increase of realism.
- Educational value is added. Stealth learning is mediated in the case of creating more dyes from plants. Playing the game educates the player whether he is aware of it or not.
- Challenges are complemented. For example, the challenge of firing a bow. The player must conform a gameplay style that requires more skill to be rewarded with a hit.
- By tripling the number of in-game biomes, exploration is motivated. Exploration excites the player. Recondite portions of the game entice players to continue playing.

- The survival aspect of the game is accentuated. For example, the implementation of hunger. The player must be tentative of the hunger bar or lose health.

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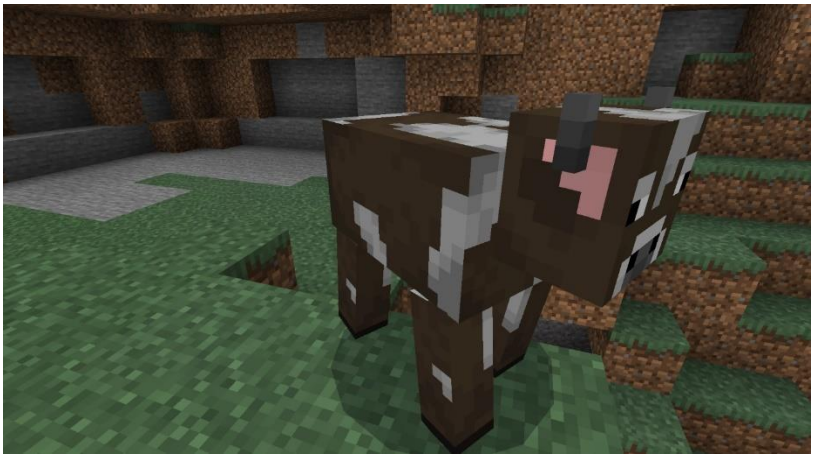

Figure 7. Cow, 2021, by Magnus Furberg