Chapter 8

Evergreen Game Design Principles

Roberto Dillon

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8.1 INTRODUCTION

In recent years, retro games have made a comeback that even their most enthusiastic supporters would have thought unimaginable. Thanks to several books on the history of games being published in the last 15 years, covering either games in general (see, for example, Herman (2016), Dillon (2011), Mott (2010), and Loguidice and Barton (2012)) or specific platforms (Weiss, 2018), we witnessed a rising awareness and curiosity for old generations’ gaming. Compilations of retro games are now regularly being released on modern platforms, like Flashback Classics (two volumes, 2016) or SEGA Genesis Classics (2018), remastered or even remade from scratch on completely different technologies like virtual reality (Doom VFR, 2018).
Even more surprisingly, hardware devices, from DIY arcade cabinets to a growing list of mini-conssoles, including the likes of Atari VCS (Atari Flashback Consoles, 2011), NES (NES Classic Edition, 2016), Sony PlayStation (PlayStation Classic, 2018), and the Commodore 64 (The C64 Mini, 2018), are all met with great enthusiasm by a crowd including people young and old.

Today, in an age where gaming masterpieces like *Red Dead Redemption* 2 (Rockstar, 2018) require hundreds of developers and many tens of millions of dollars to be developed, can such primitive playing experiences still have a meaningful role in our entertainment life? Naturally, such old experiences should not be directly compared with AAA titles like the above-mentioned titles but, perhaps, it still makes sense to compare and reference them in the context of the ever-evolving indie, casual and mobile games that are still developed by small teams, often on very limited budgets. These titles today, despite the brutal competition, still manage to be popular among many different audiences by highlighting gameplay and design elements that are actually very similar to the games of 30 or more years ago, making the latter a fundamental resource for studying the theory and practice of game design.

What are then the elements of “good” game design that seem to be forever relevant and should be taken into account by each new generation of game developers? What principles can such old games still teach and remind us in our never-ending quest for designing fun, engaging and immersive games with the potential to be enjoyed for many years to come?

### 8.2 FROM RETRO TO MODERN

We can start with the consideration that 8-bit gaming became popular thanks to arcades and home gaming systems that aimed at offering a time limited and straightforward bite-sized experience, in some ways not too dissimilar from many modern mobile games designed to be played on the go while commuting. This observation can then help us in identifying and discussing different criteria, illustrating how several retro and modern games successfully managed to replicate particular design features or concepts.

In particular, the importance of the following aspects will be stressed:

- Short game sessions and tight controls
- Using a familiar theme
• Straightforward goals
• Relaying on an emotional hook
• Teaching, challenging and rewarding players
• Mixing genres
• Understanding technical and experiential limitations

8.2.1 Short Game Sessions and Tight Controls

Arcade games, as well as many 8-bit home computer and video games, were simply brutal in terms of difficulty. In particular, arcade games already implemented something that became terribly popular decades later: micro transactions. A quarter to play a game: game over? Continue by inserting another quarter! Very simple and straightforward.

For this to make the game become addictive and, ultimately profitable from a business perspective, a few things had to be done right, since nobody obviously wants to keep crashing into a “Game Over” screen every minute. To avoid frustration, players must always end the game with a strong desire of playing again, which is only possible if their failures won’t feel inevitable or unfair: never must the player have an excuse for blaming a fault in the game design but must be forced to admit that failure was due only to his own lack of skills. “Damn! I got it! Next time I will avoid that trap!” must be the implicit thought after the fateful game over message.

The first step to achieve this is to design a tight control scheme that naturally fits the particular platform the game is released on. Games such as Donkey Kong (Miyamoto S., 1981) or Pac-Man (Iwatani, 1980), as well as most arcade games of the time, only needed a simple directional joystick and, at most, one button, to offer players an engaging gameplay experience that, despite being brutal in terms of difficulty, never felt unfair: players could actually monitor their progress thanks to their high scores and check their increasing mastery game after game. This is an extremely important point because it relates directly to a fundamental concept that was acknowledged in games only in relatively recent times: the concept of “flow.” Originally proposed in Csíkszentmihályi, Beyond Boredom and Anxiety (1975) and Csíkszentmihályi, Flow: The Psychology of Optimal Experience (1990), the flow state is identified as a mental state where a person is completely adsorbed and focused on a specific activity and even the most challenging tasks are performed with apparent ease. The relationship and interdependence between “skill” and “challenge” is
the important aspect to determine the mental state of a person engaged in a specific activity, which can fall into more or less positive connotations (Figure 8.1).

Starting with Chen (2007), game designers became increasingly aware of the importance of engaging players effectively from a psychological perspective, so much so that “flow” became a desired state for everyone, not just for the most skilled among players. Proper level design would then allow players of any ability to constantly juggle between boredom and anxiety, surfing within a “flow channel” (Figure 8.2) where the player would remain focused and be challenged in a way to constantly make him feel like a true master, even when still a beginner.

Simple but responsive controls are indeed a core reason for the terrific success of otherwise extremely simple modern game design concepts, like the surprise indie mobile hit Flappy Bird (Nguyen, 2013). Despite the game frustrating difficulty level, in fact, the precise and predictable effect of each tap on the touchscreen made the game fair, pushing players to desire mastering the simple yet engaging game mechanic and effectively enter a state of flow from the very beginning.

FIGURE 8.1 The original “flow” model as proposed by Prof. Csíkszentmihályi. Different mental states are possible depending on the person’s skills and the relative difficulty of the required activity.
Implementing a tight control scheme is even more important in platformers, requiring precise jumping, and shooters where the ongoing action can be extremely hectic. Classic examples for the latter group are the precise geometries of games such as *Tempest* (Theurer, 1981) and *Gridrunner* (Minter, 1982) as well as the chaotic excitement of *Robotron* (Jarvis, 1982), whose successes could not have been possible without responsive and precise controls. The latter game deserves additional discussion as it departed from the traditional joystick-plus-one-button kind of setup for a dual joystick scheme instead, allowing for more freedom of movement and action. Perhaps surprisingly, even such an unconventional approach did pass the test of time. A dual stick control is now common for console games such as *Dead Nation* (Housemarque, 2010) and even for mobile games, with a dual set of virtual sticks making games such as *Minigore* (MountainSheep, 2009) a great joy to play that could have simply been impossible to achieve with less responsive, or floaty, controls.*

With a proper set of controls in place, a game is ready to be played but it still has to capture the player’s attention and prick his or her curiosity. Different aspects are of paramount importance here: the game should immediately feel familiar, offer a clearly understandable and intuitive goal

* The interested reader can check McAllister (2011) for guidelines on how to effectively implement such a control scheme in the context of mobile games.
as well as be able to offer some sort of emotional hook to engage players from the get-go. Let’s start with familiarity.

8.2.2 Using a Familiar Theme

“Familiarity” means being able to implicitly use a set of well-known references that will enable players to contextualize the game and easily understand its settings without the need for further explanations or instructions. This is something that obviously needs to be done on a case-by-case basis and customized based on culture and specific events.

For example, one of the most successful movies in the early 1980s was “Raiders of the Lost Ark” (Spieldberg, 1981) so it was no wonder that, besides officially licensed games on various platforms, other games tried to implicitly reference it. A great example was *Pitfall* (Crane, 1982) which, by presenting a daring explorer jumping across vines in a jungle searching for lost treasures, was not only able to naturally remind the player of the Indiana Jones character but also of the always popular Tarzan story (Burroughs, 1912) (Figure 8.3).

Building a familiar setup was also emphasized by Sid Meier in his post-mortem of *Civilization* (Meier & Shelley, 1991) at the Game Developers Conference in 2017 (GDC Vault, 2017). In his talk, the legendary designer stressed the importance for players to interact with well-known historical figures and for the game to rely on common knowledge historical facts taken from primary school level textbooks to draw players into the gaming world. The purpose of the game was not to teach advanced historical

![Figure 8.3](image-url)  
**Figure 8.3** Indiana Jones + Tarzan = Pitfall Harry! An easy way to make a new character feel instantaneously familiar. (© Activision, 1982.)
material but to use history as a starting point to build a familiar and fun gaming world.

In the mobile space, another modern example that was able to masterfully capitalize on popular events and trends was *Campaign Clicker* (Barnard, 2016), which focused on the highly popular and divisive US presidential elections of 2016 by putting players in charge of the campaigns of either candidate, integrating their original twitter feeds into the game itself.

8.2.3 Straightforward Goals

Not only do the settings need to feel familiar, but it should also be obvious from the first moments of gameplay what the players are actually trying to achieve. It is not by chance that many very successful games, both old and new, manage to explain their goal by showing it without the need for further instructions. Take, once again, the classic *Donkey Kong* (Miyamoto S, 1981): it is clear, even to the most distracted of players, that their character starting at the bottom of the screen needs to climb up all the scaffolding to reach and save the damsel in distress. Infinite runners such as *Temple Run* (Imangi, 2011), besides relying on an “Indiana Jones” type of character like *Pitfall* did decades earlier, make it obvious the player has to keep running and grabbing as may coins as possible by lying a string of them in front of the character while also showing a mob of angry creatures chasing after the character. Also, non-action-oriented games need to take this aspect into account whenever possible, puzzle games in particular. Word games such as *Alpha Bear* (SpryFox, 2015), for example, accomplish this very well not only by clearly laying down the letters on the game board but also by making them look like gummy buttons that are just waiting to be clicked and interacted with to make up the required words. Players know what to do and how they should be doing it without the need to be explicitly told so.

No matter the genre and topic of the game, players must have obvious visual cues to direct them to what they are trying to achieve!

8.2.4 Relying on an Emotional Hook

The last piece of the puzzle to effectively engage players from the very beginning is to offer a strong emotional hook able to grab anyone’s attention. The importance of building an engaging experience based on a set of basic emotions is well known, see, for example Dillon (2010), but a core, specific emotion should be stressed above all others to define the experience from
the very beginning, hence setting a predominant mood for the entire game. This can be achieved by following a multitude of techniques dependent on the specific emotion desired. Common and highly effective emotional hooks that can be used to build an engaging experience are fear, curiosity, competition, empowerment/greed and the desire of protecting the helpless. Let us briefly discuss a few examples for each of these.

To build a sense of fear, it is possible to set the game in any dark, isolated environment where it is easy to imagine hostile creatures lurking around, waiting for a careless player to step into their trap. Woods worked beautifully yesterday, like in *Forbidden Forest* (Norman, 1983), as well as today in *Slender: The Eight Pages* (Hadley, 2012). Another strategy could be removing vision altogether in favor for an echo-location system like in *Stifled* (Gattai, 2017) where the ability to perceive our surroundings is also going to expose us to the monsters. Essentially, the removal of information, which players need to extrapolate and guess by themselves to proceed in the game, can work very well for creating suspense. On the other hand, if it is knowledge that is missing, instead of sensory inputs, this can help in building a mounting sense of curiosity. This is typical of adventure games, since the days of *Zork* (Infocom, 1977) and its isolated white house in an open field or *Myst* (Miller & Miller, 1993) with its enigmatic and deserted island, quietly waiting for players to unravel its mysteries. A common trope used in countless modern action and RPG games as well.

Competition is another very powerful hook that can work in a multitude of ways. Not only head-to-head battles can make for an exhilarating experience, from the straightforward one-on-one shooting in the Atari VCS launch title *Combat* (Decuir, Mayer & Kaplan, 1977) or the more nuanced confrontations of *Spy vs. Spy* (FirstStarSoftware, 1984) to the modern “battle royale” approach, but even indirect forms of competition can be highly effective. Players were more than willing to struggle for long hours with an objectively difficult control scheme in *Asteroids* (Rains, Logg & Walsh, 1979) to beat their friends and gain bragging rights by showing their three-letter acronym on the game’s leaderboard for all arcade goers to see. Also mixing co-op (e.g. having a common goal) and competitive elements (e.g. limited resources or power-ups) can help to originate very interesting gameplay moments, where players have to trust each other and then hope their partner won’t suddenly cheat on the agreed co-operation, in ways not dissimilar to common dilemmas reminiscent of academic game theory. *Chip and Dale Rescue Rangers 2* (Fujiwara, 1993) remains a great example until this very day.
Empowering players is another common technique able to arouse strong emotions. Making players feel they are an almighty entity, like in *Populous* (Molyneux & Edgar, 1989) or a powerful mayor, like in *SimCity* (Wright, 1989), who is building a new world, is an excellent starting point, as it is assigning the role of a trader or tycoon who is on his/her way of becoming the richest person in the land. No matter how “virtual” and useless an in-game currency is, players will always love the illusion of becoming richer.

Last, but clearly not least, the easiest and most overused approach of all: i.e. relying on our instinctive impulse of protecting someone in need. Telling players they are the last remaining hope to save a damsel in distress, never mind if she is kidnapped over and over again, a farrow of piglets threatened by bad wolves (Fujiwara, 1982), the universe or anything in between is, generally speaking, a good starting point to capture someone’s attention and long-lasting commitment.

8.2.5 Teaching, Challenging and Rewarding Players

Having captured a player’s attention is absolutely necessary but, unfortunately, it is not enough. Such attention must be continuously renewed, ideally by keeping players within the “flow” zone discussed earlier. To achieve this, players should constantly be given suitable opportunities to improve their skills, be introduced to new challenges and rewarded accordingly from the very beginning.

For a beautiful example of how a game can teach players, i.e. introduce them to the most basic game mechanics, challenge and reward them all within the first few seconds of gameplay, look no further than the original *Super Mario Bros.* (Miyamoto S., 1985) (Figure 8.4).

Here the game starts with the player in the lower left corner of the screen. There is nothing happening yet, and the player is free to start experimenting with the control scheme (i.e. moving around and jumping). As Mario moves toward the right, he will first meet a block with a question mark: beginning players will try to jump on it and hit it from various directions, ultimately finding out how to unlock its secret. A lonely enemy will then show up. The first real challenge in the game. Again, beginners may fail here at first, but the game has just begun so restarting right away won’t make players lose any progress. Once the first enemy has been defeated, players will likely keep practicing their newly acquired jumping skills and hit the next question mark blocks. A mushroom will magically appear but, at this stage, the player does not know yet whether that is another enemy or a power up. The trajectory of the mushroom is designed to make
it difficult to avoid, so beginners will likely collide with it even if they are trying to jump over it (they may be stuck under the blocks) and realize that was a power up and a reward for their jumping efforts!

Within a few seconds of gameplay, the game already managed to teach all the fundamentals, how to defeat enemies, discover secrets and even offered a big reward that made Mario more powerful. Most importantly, it did so without having to explicitly tell players how to do anything: every learning opportunity was naturally integrated in the level itself! Players are now hooked and fully focused on the game, even beginners were likely in the “zone” despite being still close to the origins of the axes in Figure 8.2.

8.2.6 Mixing Genres
As complexity in games increases, it is more and more common to see genres blurring and mixing into each other. This can give birth to original masterpieces or to a disorderly mash-up of ideas. When does it feel one way or the other?

One of the first games that successfully managed to merge different genres and offer an overall cinematic experience was Impossible Mission (Caswell, 1984). Besides feeling very familiar to players thanks to obvious 007 references, Caswell’s 8-bit masterpiece perfectly integrated a stealth
based platforming action with visual and audio puzzles that enriched the gameplay and offered a welcome change of pace when needed. All these, together with state-of-the-art graphics and sound effects, built up an experience that passed the test of time.

For the genre-mixing approach to work, though, it is of fundamental importance to have a strong game design and/or narrative able to integrate each component tightly. The different types of gameplay must support and complement each other by building on the respective strengths. Award-winning indie game *Undertale* (Fox, 2015) is a great example where traditional RPG mechanics were surprisingly matched with elements from old school shoot ‘em ups and rhythm games to form a very innovative way to solve battle encounters.

Games like *Ni No Kuni 2* (Level5, 2018) use a well-written story to bring and tie together in a cohesive unit a set of mini games, as discussed in Reeve (2019) and, indeed, story-driven games are a perfect canvas for experimenting with different genres. Titles like *Banner Saga* (Stoic, 2014) tell a compelling story by following a visual novel approach and then successfully switching to strategic turn-based battles to progress it. Every battle integrates with the overall story arc and helps in building a stronger connection between players and each hero in the game. Other titles tried a similar approach but were not as successful. For example, *This is the Police* (Weappy, 2016) tried to support a mature story, told, once again, by following a visual novel approach, with gameplay typical of time/resource management games where the player has to manage all the officers in the department and assign them to suitable cases. Despite the obvious qualities of the game, the result got mixed reviews, as summarized in the corresponding Wikipedia article (Wikipedia, 2020). Several reviewers, in fact, found the latter missions repetitive and the team management aspects unable to effectively integrate with the personal story of the police chief (i.e. the player) being told in the visual novel section of the game.

### 8.2.7 Understanding Technical and Experiential Limitations

Smart design choices can effectively turn constraints into strengths: in his seminal *Football Manager* game on the ZX Spectrum (Toms, 1982), Kevin Toms took advantage of the computer’s sluggish speed (the original game was even written in Basic!) to build up emotional tension as match results were slowly printed out line by line. Today, though, learning how to overcome a system’s limitations to optimize and finetune a game may not seem
that relevant anymore, given that every single device we use is incredibly more powerful than any 8-bit system the industry used in its early days. By relying on hardware’s raw power, game designers may easily fall into a false sense of security and get the impression that they can finally do whatever they want, without worrying about anything. Nonetheless, players’ expectations also keep rising alongside computational power and, if developers are not careful, performance issues can still be found, especially on mobile or handheld devices. In the end, it does not really matter how powerful a platform is: an in-depth understanding of each specific target is always needed to achieve the best possible results. In his 2009 GDC keynote “Making the Impossible Possible,”* Hideo Kojima remarked how he and his team managed to shape the Metal Gear game designs to overcome the apparent insurmountable hardware limitations imposed first by the MSX computers and then by the PlayStation and still develop experiences that could match fans expectations (Alexander, 2009). It is important to note, though, that today, with new and emerging platforms like virtual reality (VR), not all problems may necessarily be related to performance but may be even more subtle and experiential in nature. When it comes to games for VR, in fact, we are still learning as we go: developers can identify best practices only thanks to direct experience, via successes and failures. For example, many games are still struggling with annoying side effects such as motion sickness but, even in the unlucky case we cannot find a way to avoid such problems, it does not mean we should give up on the idea of designing an engaging game. The puzzle game Statik (Tarsier, 2017) manages to brilliantly avoid such issues by having the player tied to a chair and only able to manipulate the required puzzle elements via his or her hands, which are stuck in a box. It may sound very weird, but the setup will feel perfectly natural once the player’s hands are “glued” to the controller.

8.3 CONCLUSION

Hopefully, the examples discussed in this chapter can make us appreciate how old games, despite appearing so distant in time, can still hold valuable design lessons and may actually be quite close, under certain perspectives, to modern games. Students and professionals alike, especially in the fields of casual and mobile games, can still find plenty of inspiration by

* The actual video can be watched here: https://www.youtube.com/watch?v=7Pq1Jyr6ffU
analyzing how earlier developers quickly engaged players despite having very little technical means at their disposal.

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