# Analyzing Games with the AGE and 6-11 Frameworks

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## 1.1 INTRODUCTION

Among the different models conceptualized to help game designers analyzing the inner workings of games, the AGE (Actions, Gameplay, Experience) and 6-11 Frameworks (Dillon, 2010) have been adopted by both industry and academia thanks to their simplicity and ability to
synthesize in an easy to understand diagram* how players’ engagement can develop around a specific set of emotions and instinctive behaviors thanks to actual gameplay features. See, for example, Marins et al. (2011), Kerlow et al. (2012) and Göbel (2016).

1.2 THE AGE FRAMEWORK

Inspired by the original MDA model (Mechanics, Dynamics, Aesthetics) proposed in Hunicke et al. (2004), the AGE framework was gradually formalized following the original work in Dillon (2010) and ultimately finalized in Dillon (2016). Like the original MDA, it breaks down a game into three different conceptual layers. At the most basic level we have the **Actions**, which represent the atomic actions a player can perform in a game. These are usually described in terms of verbs like moving, jumping, kicking a ball, punching, shooting, taking cover, shifting tiles, etc. By combining the possible actions according to the game rules, we move to the next layer, i.e. the **Gameplay**. This can also be described either in terms of more general verbs or higher-level concepts like fighting, race to an end, avoidance, territorial acquisition and so on. Through the gameplay, players aim at overcoming some form of challenge or achieving a certain goal as requested by the game and, in doing so, the typical sequence of failures, successes and rewards will manage to engage them emotionally in what the model describes as the third, highest level: the **Experience**, i.e. the emotional experience that engages players during the game.

It is important to understand how the concepts outlined in the model do not work in isolation but are inherently related to each other: players apply the predefined rules to give a purpose to the available actions, producing the resulting gameplay. This then is used to overcome the specific challenges the game is all about and these provide players with a reason to immerse themselves in the gaming world and get emotionally engaged in what they are doing, as summarized in Figure 1.1.

1.3 THE 6-11 FRAMEWORK

Analyzing Actions and Gameplay should be relatively straightforward, but the Experience involves emotions and can be, henceforth, subjective. How shall we describe it then? And, even more importantly, how to actually connect it to the actual gameplay that is happening on the screen? The

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* The diagrams summarizing the analysis are often referred to as “on the way to fun” diagrams, as first presented in Dillon (2010)
original MDA tried to solve this problem by means of the “8 Kinds of Fun” taxonomy while the AGE framework here adopts another model, the 6-11 framework.

The idea behind the latter is that games can be so engaging at a subconscious level because, in general, they successfully rely on a subset of a few basic emotions and instinctive behaviors, which are well known in psychology and deeply rooted in all of us. In particular, the six emotions originally included in the model, involving both positive and negative emotions, are:

1. **Fear**: one of the most common emotions in games nowadays. Think of survival horror games or dungeon explorations in RPGs for plenty of examples.

2. **Anger**: a powerful emotion that is often used as a motivational factor to play again or to advance the story to correct any wrongs that some evil character has committed.
3. **Pride:** rewarding players and making them feel good for their achievements and successes is an extremely important motivational factor. Players need to feel good about what they just did and aim at even higher successes.

4. **Joy/Happiness:** arguably, one of the most relevant emotions for having a fun gaming experience.

5. **Sadness:** despite being an emotion that doesn’t seem to match with the concept of “fun,” this negative emotion has always played an important role in games and designers have always been attracted by it as a way to reach new artistic heights and touch more complex and mature themes.

6. **Excitement:** most games worth playing should achieve this and it should happen naturally as a consequence of successfully triggering other emotions and/or instincts.

Moving to the instinctive behaviors, the framework discusses games in terms of the 11 following behaviors:

1. **Survival (fight or flight):** the most fundamental and primordial of all instincts, triggered when faced with a life threat. According to the situation, we will have to decide whether we should face the threat and fight for our life or try to avoid it by finding a possible way to escape. Relying on this instinct is very common among many modern videogames, especially first-person shooters (FPS) and survival horror games.

2. **Self-identification:** people tend to admire successful individuals or smart fictional characters and naturally start to imagine of being like their models. This is common of all entertainment, especially those based on storytelling, and it is even more relevant in games where, thanks to their interactive nature, players actually have a chance of wearing the hero’s shoes.

3. **Collecting:** a very strong instinct that motivates players to look for and form patterns of objects by completing sets with a common theme. It also relates to our hunting instinct. While always present in many games since the early days of the medium, it has been extremely prominent in the last few years via the infamous “loot boxes,” pushing players to desperately look for rare items.
4. **Protection/Care/Nurture**: arguably the “best” instinct of all: the one that pushes every parent to love their children and every person to feel the impulse for caring and helping those in need despite the possible dangers, including countless princesses in distress and kidnapped girlfriends.

5. **Aggressiveness**: the other side of the coin, usually leading to violence when coupled with *greed* or *anger*. It is exploited in countless of games, too, especially in FPS and fighting games.

6. **Greed**: this is another typical human behavior that is responsible for the addictive qualities of many games: hoarding resources, virtual money and so on is a common habit and motivational factor across many games.

7. **Revenge**: another powerful instinct that can act as a motivational force and is often used in games to advance the storyline or justify why we need to annihilate an alien or an enemy.

8. **Competition**: the need for measuring our skills against those of others is one of most important instinct in relation to gaming, whether the competition happens within the game itself or outside the game, by means of leaderboards. Without it, many games would lose much of their appeal.

9. **Communication**: the need for expressing ideas, thoughts or just gossip, was one of the most influential for human evolution. It can be used to great effect in games too, while seeking information by talking to a non-playing character (NPC) or while sharing experiences with other players in chatrooms and forums.

10. **Exploration/Curiosity**: all human discoveries, whether of a scientific or geographical nature, have been made thanks to these instincts that always pushed us towards the unknown. Many adventure games rely on curiosity alone to engage players and push them to progress.

11. **Color Appreciation**: scenes and environments full of vibrant colors naturally attract us, whether it is an abstract or a photorealistic setting. This is often important to capture players’ attention and interest from the get-go. Note this is about the artistic use of colors and the palette used to make graphics attractive regardless of the technical specs, screen resolution or even the actual number of colors used.
1.4 HOW TO ANALYZE GAMES

The AGE framework may be seen then as a canvas where we can use any of these elements to discuss how games successfully engage players emotionally and how emotions and instincts are then the driving forces that make players act in the game.

For example, we can imagine a horror game scaring the player with a sudden encounter with a monster in a dark room. This will likely trigger the player’s survival instinct, pushing him to find a way to answer the threat, for example, by escaping and avoiding the danger, which is made possible by the actions the game offers, like the ability of running or hiding somewhere. All these pieces of information can be assembled together in diagram form where Experience ultimately leads the player to “fun” and is linked to the Actions via the Gameplay as exemplified in Figure 1.2.

With the basics now discussed, let us try to use the framework step by step, starting with a very simple game at first and then progressing to a more articulated example to analyze in detail a modern game.

1.4.1 Game Analysis: Frogger (Konami, 1981, Arcade)

In Frogger (Figure 1.3), players control a small frog that, starting from the bottom of the screen, needs to find a safe haven by navigating a trafficked highway and a river.

Our analysis can proceed either in a top-down approach, from the Experience down to the Actions, or the other way round, in a bottom-up style. Let’s start with the latter by identifying the Actions first and then go up to towards the Experience.

So, what are the “Actions” in Frogger? Let’s start by playing the game and ask ourselves “What can I do?” If there is any doubt here, the best way

![Diagram](image-url)

**FIGURE 1.2** An example of a simple “On the Way to Fun” diagram outlining the Experience, Gameplay and Actions for a generic horror game: the survival instinct is what motivates the player to escape (Gameplay) by using the available abilities at his disposal (Actions). Fear and Survival also lead to Excitement, delivering a “fun” experience overall.
to proceed is to check the game controls as the actions, by definition, are necessarily tied to them.

In Frogger, this analysis is extremely simple as we only have a joystick that allows us to move left, right, to advance and to retreat.

With the Actions clearly identified, we can now proceed to the next stage and analyze the gameplay. For doing so, we should ask ourselves something like “What are the game rules allowing us to use the Actions for?” Or, more simply, “What are we actually doing in the game?”

In the case of Frogger, we are trying to avoid the speeding cars and then jumping on the floating logs to reach a safe haven at the top of the screen. In game design terms, we can say the gameplay is about “avoidance” of different hazards together with a “race to an end” component. By describing the gameplay in these terms, we have also identified the goal and we are then ready to discuss the emotional Experience. For this, we have now to ask ourselves “How does the gameplay make me feel?”

This is the most subjective part of the analysis and can obviously be quite tricky, but we can rely on the 6-11 framework to guide us in the process.

Most likely, we would point out that, while playing the game, we were excited by the fast action of moving across the highway and river and then
happy for successfully reaching the end. Notice that we have already identified the two main emotions that make Frogger fun and enjoyable but why were we happy? Because we felt proud for our success!

Indeed, pride plays an important role here and, in fact, it usually resolves into Joy and Happiness. Our experience is gradually taking shape.

Now, what is it we are actually proud of? Surviving the perils we had to face across the road and river! So, survival is the main instinct at play here and it actually drives us towards the goal of the game. In the process, we may also realize that, by looking at the cars approaching from all directions, we might have felt a bit scared and that we have unconsciously taken the role of the frog, i.e. we identified with it.

The whole analysis can then be summarized into an “on the way to fun” diagram like the one shown in Figure 1.4.

Anyway, as stated earlier, analyzing the Experience can be quite subjective so some players may see things a bit differently.

For example, they may have not thought they were taking the role of the frog in the first place but, on the other hand, they simply thought their role was to “help” the unlucky frog to safely reach the pond. In this case, Identification, Fear and Survival wouldn't play any role in their emotional experience. Instead, they would be substituted by Protection. In this case, the frog is not an avatar, but it simply acts as a character the player has to save and rescue.

Under this assumption, the resulting “on the way to fun” diagram would be modified like Figure 1.5.

What if instead we decide to analyze the game following a top-down approach?

FIGURE 1.4 “On the way to fun” diagram for Frogger.
Again, we start our analysis by playing the game but this time we try to figure out the Experience first by asking ourselves “How is the game trying to motivate me? How do I feel while playing?” This should lead us to question our relationship with the playable character: is it an avatar (“I’m playing as this little frog who has to cross the street”), which will lead us to the Identification-Fear-Survival route, or just a character we have to protect (“I have to help this poor little thing!”), leading us to the version with Protection at its core. Once the emotional analysis is in place, we can proceed downwards with the questions we saw earlier for identifying the Gameplay and then how this originates thanks to the available Actions.

Anyway, regardless of our starting point, either the Actions or the Experience, we should arrive to the same result at the end of our analysis.

1.4.2 Game Analysis: Loading Human (Untold Games, 2016, PC/PSVR)

Naturally, not all games are as straightforward as Frogger, though. How can this approach to game analysis help us gaining valuable insights on a modern and much more complex title? As an example, let us try to discuss a recent VR-based PC and PS4 game, Loading Human, developed by Untold Games and released in 2016. This was an ambitious project and a launch title on the PSVR platform. Nonetheless, despite the hard work that was put in the project by its developers, the game was met with mixed reviews (Metacritic, 2016). Can an analysis based on the AGE framework help in identifying the game’s strong as well as weak points?*

* Be aware the following analysis will necessarily include a few spoilers.
By proceeding with a top-down approach, i.e. by playing the game and trying to outline how it aims at engaging players emotionally first, we can easily understand how the design wanted to immerse players in a rich emotional experience. First and foremost, by making the player become the leading character, Prometheus, the Experience clearly began with the Self-Identification instinct. This should be achieved naturally thanks to the VR perspective and by offering a visually stimulating environment (Color Appreciation to help drawing players into the gaming world). These, then, set the stage for making the player curious enough to proceed in unfolding the mysterious story.

Indeed, Curiosity should be the “leitmotif” to keep players engaged and motivated throughout the game, also thanks to our Protection instincts. For the latter, the starting point is the desire to save our dying father and then help/protect our romantic interest Alice, engaging the player with different emotions as the game advances the well written storyline.

Ultimately, the emotional experience can be outlined in Figure 1.6.

Like all good old adventure games since the days of Maniac Mansion on 8-bit home computers, all these emotional hooks to engage players should be achievable by a gameplay revolving around storytelling and the solution of environmental puzzles which are, in turn, advanced by the simple actions of navigating the different locales to find and manipulate various objects.

**FIGURE 1.6** Thanks to the “On the way to fun” diagram, we can easily visualize how Loading Human aims at providing a rich emotional Experience, with curiosity being the central component to keep players engaged into specific forms of Gameplay. These are obtained via straightforward in-game Actions involving movement and object manipulation.
If everything fits in place as planned, the game should then be able to provide a fulfilling emotional experience, ultimately leading to excitement for solving the various puzzles and advancing the storyline while also making players proud and happy for achieving their goals, delivering a fun and memorable overall experience.

Unfortunately, not all reviewers appreciated the final result so let’s try to use the earlier diagram as a starting point to discuss the game piece by piece and figure out where the game eventually fell short of expectations.

1.4.2.1 Color Appreciation

Let’s quickly discuss the game’s environment and aesthetics first. Textures, shaders, models, sound design and so on are above average for an early PSVR game and certain environmental details are actually very effective in making the virtual world feel believable and real. For example, early in the game the player has an opportunity to stand on the deck of his base, staring at the beautiful desolated landscape while a menacing thunderstorm is approaching. If the player stays there long enough, he can witness lighting strikes in the distance, with thunder realistically arriving only a few seconds later. This is a beautiful little detail that can effectively increase the feeling of being immersed into a believable virtual world.

1.4.2.2 Self-Identification

Virtual reality should make this fundamental aspect of games played in a first-person perspective very straightforward and easy to accomplish. The onboarding process/tutorial here works well and players have a chance to know more about the world the game takes place in by checking out newspaper articles and TV news, which are easily available and scattered all around. All of these are great ways to enhance the feeling of immersion. Despite this, in Loading Human, achieving an effective identification with the player’s character can be quite challenging from a psychological perspective due to a questionable choice in designing the character of Prometheus himself.

This is a very important point that can be illustrated by referencing Half Life (Valve, 2009) and its sequels, which are FPS classics. These games made the self-identification aspect between the player and Gordon Freeman, the playable character, one of their most significant and acclaimed features, effectively breaking the fourth wall between the game and the player. In those games the player is Freeman, who is just an empty shell to be filled.
In game design terms, Freeman is an “avatar” not an “actor,” which is typical of third-person games.* To fully achieve this, Freeman never speaks directly in the game: he has no voice because his voice is the player’s own actions.

The hidden problem in *Loading Human* is that Prometheus is still essentially designed as an actor and not as an avatar: he just keeps talking by his own will and has his own independent voice throughout the game. This may cause a disconnection between players and Prometheus that can ultimately break the subconscious feeling of being the main character because the player loses control whenever he says or thinks something we don’t necessarily expect.

The reason why Prometheus talks so much are easy to understand (e.g. advancing the storyline, items description, hints and so on) so this was a natural design choice but it would have probably been more effective to design some of those interactions in a different way. Specifically, throughout the game the player is assisted by an AI companion named Lucy. This NPC could have played an even bigger role and several of those tasks could have been delegated to her instead, short item descriptions could also be shown on the objects themselves while looking at them. It should also be noted that dialogue was very linear throughout the game with no branching. This can also be perceived as very limiting since players will feel like they have no control whatsoever as there are no decisions to take in what Prometheus says.

Indeed, advancing dialogue thanks to simple multiple choices would have helped greatly for achieving the self-identification aspect of the game, for feeling in control of the avatar and being Prometheus. Note that it may not really matter whether the game has a truly branching storyline or is still based on a linear narrative, with the final outcome being essentially the same regardless of the player’s own dialogue choices: as pioneer game designer Mel Croucher of *Deus Ex Machina* fame (Automata, 1985) once said, it is all “bunkum,” i.e. smoke and mirrors, so giving players an illusion of control may have been enough here to effectively increase immersion.

In *Loading Human*, unfortunately, we can say that the self-identification aspect of being the hero of the story was not fulfilled while this should have been a pillar of the emotional experience as outlined by the AGE analysis. The lesson to learn here is that, in first-person games and even more so in VR experiences, it is extremely important for the player to

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* Think of Geralt of Rivia in the *Witcher* series (CD Project Red, 2007–15) for a typical actor.
feel fully in control of their avatar. This also means players should get the impression they are doing all the talking or are, at the very least, responsible for it and what is being said follows their own choices. The avatar should never talk by himself otherwise it becomes much closer to being an actor, making a true first-person immersion and self-identification much more challenging, if at all possible.

1.4.2.3 Curiosity
Curiosity is generally the main driving force behind adventure games and *Loading Human* is no exception. As discussed, the rich environment and overall game aesthetics do a proper job in making the player interested in the virtual world and, consequently, willing to unfold the upcoming plot. This is what pushes the player forward and links the emotional experience to the actual gameplay, as shown in Figure 1.6.

1.4.2.4 Gameplay: Storytelling and Puzzle Solving
Generally speaking, gameplay in adventure games tends to be based on puzzles. These works in symbiosis with the abovementioned “curiosity” instinct to reinforce each other, i.e. curiosity motivates players to solve puzzles and each puzzle should advance the story providing new hooks to keep players engaged, hence willing to find out what happens next.

*Loading Human* has an interesting and mature storyline which is advanced thanks to several environmental puzzles involving objects manipulation. Unfortunately, these fall mostly in the “ordinary use” of objects and don’t require much lateral thinking, a must-have ingredient in adventure games to engage players effectively and offer a rewarding and memorable experience. For example, going to a specific location for making tea would be an effective tutorial puzzle to teach players movement and objects handling, even though there is nothing exciting or original about it, but it is just too mundane if placed well into the adventure, as it happens in the game.

Besides puzzles, a notable feature of the gameplay here is the presence of arcade style minigames as well as wireframe sequences where players are tasked to reconstruct some aspect of a scene by linking different elements together. Overall, these can help in providing a change of pace and take a short break from the main story but one such episode in particular was actually detrimental to the emotional experience: a section of the game involves the player trying to rescue his romantic interest Alice from a fire. While in the middle of the action the scene is suddenly interrupted
with no warning and the player is asked to complete a wireframe sequence to identify the fire source. There is no timer involved (hence no urgency to find a solution while the damsel in distress was supposed to be in a life-threatening situation) and the abrupt change in gameplay here can actually break all the excitement that could have been achieved for rushing in and saving Alice. Breaking the rescue scene was also a missed opportunity for enhancing the protection instinct and rewarding players for their bravery. On the other hand, tracking back the causes of the fire may have been an interesting exercise once the danger was over and before getting back to the main storyline to relax a bit and take a breath.

In the end, the gameplay in *Loading Human* showcases a good story but a closer look at how the story actually unfolds, thanks to its puzzles, shows how the latter are too simple to effectively engage players. The lack of puzzles involving interesting solutions based on lateral thinking makes progress less rewarding and, most importantly, may fail in keeping players’ curiosity alive. Since curiosity is supposed to be a central component of the experience, this can be a major problem. Unfortunately, action sequences are also not exciting enough to effectively provide a change in pace and can even be detrimental to some important emotional components. Ultimately, a closer look at the gameplay trying to relate it to the intended emotional experience shows how the former is not able to effectively support the latter.

### 1.4.2.5 Actions: Movement and Object manipulation

All the gameplay elements discussed are implemented thanks to specific actions, here essentially revolving around movement and manipulation of objects.

The latter worked very well but movement had issues that were often pointed out by reviewers as playing often induced motion sickness. This was, and still is, a common problem in VR and developers keep trying new approaches. In this specific case, the game offered too much freedom of movement to players: for example, it was possible to turn around while moving or looking down for items on the floor while walking and then bumping into objects and furniture, abruptly stopping Prometheus. If playing while sitting down, these kind of interactions could trigger discomfort and motion sickness. In a game that involves a significant amount of movement across different rooms to accomplish the required gameplay, this can obviously become a serious issue.
1.5 CONCLUSIONS

Based on clear definitions and a limited, but flexible, palette of building blocks, the AGE and 6-11 frameworks can be useful tools in both game analysis and design: by framing the most important elements of a game into an easy to understand diagram form, they can help in conceptualizing a coherent system and check that all different elements fit together properly and support each other effectively. In relatively simple games, like many mobile and casual titles, the analysis process can be very straightforward and self-explanatory, while in more complex games, it can still outline the most important components and point in the right direction for further discussion.

REFERENCES


