Opening up the ‘open world’ concept

ON THE NARRATIVE POSSIBILITIES CAUSED BY THE EXPERIENCE OF ENVIRONMENTAL NON-LINEARITY IN ‘OPEN WORLD’ GAMES

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Introduction

Video games are becoming more and more technically capable of offering richly filled and complex virtual environments. This development provides new possibilities for creating and experiencing a communicated narrative inside what many game developers have called an ‘open world’; a vast and complex virtual environment.

In this thesis I will analyze these ‘open world’ games in terms of their narrative possibilities, and describe their development as a current trend in mainstream game development. ‘Open world’ games offer players a ‘non-linear’ or unbounded spatial experience of the virtual environment by allowing players to freely roam the three-dimensional space. In this thesis I will discuss how this experience can provide new narrative possibilities and analyze these possibilities in order to create an overview of present practices.

Although much has been written about the narrative possibilities of video games in general, the focus is rarely on the narrative possibilities provided by an open, non-linear virtual environment. However, if it is the case that this open, non-linear environment provides possibilities for communicating narrative, the ‘open world’ concept stands in need of an analysis in terms of these new possibilities. In this thesis, I will provide such an analysis of the narrative possibilities of open world games, on the basis of the following research question:

- Which narrative possibilities does the experience of environmental non-linearity in open world games provide?

As a sub question, I will also focus on how these new narrative possibilities can provide an explanation for the often mentioned informal characteristics of ‘open world’ games, such as a sense of ‘freedom’ and ‘interactivity’, thereby hoping to provide a formal ground for the experience of these characteristics in my analysis.

In the first chapter, I provide a brief historical context of the development of ‘open world’ games. I will show how the provided ‘environmental non-linearity’ in ‘open world’ games, namely the free exploration of the virtual environment, offers the player some agency to wander off the intended path and explore the space in which the narrative takes place. The
existence of a free-to-explore narrative space provides game developers with new ways of communicating an intended narrative to players, and also provides them with the possibility of creating their own (unintended) narrative. Then, I will argue that the current ‘definition’ of the ‘open world’ concept is still of a journalistic nature, and therefore in need of a scientific assessment.

Although there are many different possible methods for analyzing open world games, I will use Kwastek’s proposed method for analyzing interactive artworks throughout this thesis, for two reasons. Firstly, because open world games are clearly an interactive artwork, actualized by the player’s active agency (in the ‘non-linear’ environment). Since most new narrative possibilities are brought about by the fact that the player can interact with a non-linear environment, Kwastek’s proposed method of focusing on the interaction rather than the artifact is most suitable for my analysis. Secondly, her focus on the subjective experience of the artwork is most suitable to my research question; I will start from the player’s experience of (un)intended narrative, and ask how this is made possible by the experience of non-linearity in both the environment and a possible textual structure.

From Kwastek’s method, I will derive two focus points for my own analysis when discussing the interactivity within ‘open world’ games, namely:

- The technical system behind the game
- The experience of the game

In order to answer my main research question I also need a working definition of ‘narrative’. I will discuss different possible working definitions of the term ‘narrative’, and will argue that using media scholar Marie-Laure Ryan’s proposition - presenting a ‘toolkit’ consisting of narrative ‘ingredients’ - will be the most useful for my own analysis. Ryan’s approach to defining ‘a narrative’ is particularly useful for my analysis, because she looks at narrativity as a transmedial concept, which is not necessarily limited to linear, text-based media. This opens up possibilities for non-linear and interactive narratives. Therefore, I will also shortly elaborate on the term ‘non-linearity’ in relation to its textual context in video games, which Ryan describes as a ‘textual architecture’ of a narrative inside a video game. I will point out that this textual form of non-linearity can exist alongside environmental non-linearity in ‘open world’ games, as introduced in the first chapter.
Additionally, I will apply Ryan’s distinction of ‘a narrative’ (which is intended by an author) and ‘narrativity’ (which can also be unintended) to my own field of study. I will regard ‘intended narratives’ as directly communicated by the game developers, in the form of both a textual architecture and/or elements placed in the environment, and ‘unintended narratives’ as created or generated through player interaction, made possible by the technical systems behind the game. Using this distinction between intended and unintended narratives, I will analyze several ‘open world’ games in the third chapter, in order to give examples of different unique narrative possibilities caused by the experience of environmental non-linearity.

In the third chapter, I attempt to answer the research question directly, by pointing out four distinct narrative possibilities which result from open world games’ non-linearity.

First, I use Stephen Mamber’s notion of ‘narrative mapping’ to show that ‘open world’ games have the unique ability to provide the player with a geographic map as part of the game’s interface. I will look at Kristin Jorgensen’s concept of ‘game world interface’ to analyze this possibility in ‘open world’ games. I will show how the environment of the ‘open world’ game can be used as an interface to ‘train’ the player to understand the narrative space.

Secondly, I describe how environmental non-linearity can be intensely used for what Henry Jenkins has described as ‘environmental storytelling’ in video games. Building on this, I will describe how ‘open world’ games may even create a new category within Jenkins’ notion of ‘environmental storytelling’, namely that of what I will call the ‘living environment’. I will show how the ‘living environment’ is created by the use of technical systems behind the game.

Thirdly, I discuss the possibility of ‘emergent narratives’ as a category within Jenkins’ notion of ‘environmental storytelling’, and analyze how ‘open world’ games can use their non-linear environment to allow for emergent narratives in two different ways:

- By creating a ‘sandbox’ that provides environmental tools to completely construct a narrative space
- By using the living environments in combination with player interaction in order to generate a narrative.

Lastly, I analyze the possibility of an intertwinement of textual and environmental non-linearity in complex ‘open world’ games. Furthermore I will describe a possibility for ‘open world’ games to provide intended narratives and to allow unintended narratives in the same
narrative environment. I will conclude that this complex intertwining may form a foundation that could further strengthen the experience of ‘freedom’ or ‘interactivity’. I will argue that the experience of these complexities forms the basis for an experience of ‘freedom’ and ‘interactivity’, which are the terms often mentioned (but rarely unpacked) in journalistic articles.

My conclusion will provide an overview derived from the analysis of the third chapter, and thus offer an answer to the proposed research question.

**Chapter 1: Defining the ‘open world’ concept**

‘Spatiality’ forms one of the key components of any narrative, as they all take place in an environment. As described by scholar Björn Thuresson, ‘narrative space’ may serve as a ‘container’ of a narrative, which can exist of both a material environment, and an abstract one. According to Thuresson, the material environment is a representation of an actual physical space and an abstract environment can be completely fictional or non-existent.

The importance of a narrative space in which a narrative unfolds is also pointed out by scholar and new media critic Marie-Laure Ryan when providing her definition of the term ‘narrative’ in the form of list of multiple conditions. The most common condition which may constitute a narrative is the ‘spatial dimension’. Ryan states that every “narrative must be about a world populated by individuated existents.” This populated world mentioned by Ryan, and the material container by Thuresson, can be seen as the virtual environment in video games, powered by complex technical systems behind it.

Because of the importance of spatiality for any kind of narrative, I will briefly sketch a historical context of the development of the virtual environment (or spaces) within video games. I will do so in order to get a better understanding of the technological development behind them, and to argue that ‘open world’ games allow a ‘narratively rich’ fictional world (or ‘diegetic space’) for the player to explore. I will argue that this points towards narrative possibilities.

Furthermore, I will discuss the current (informal) definition of the ‘open world’ game concept,

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2 Ibid., 86
3 Ibid.
5 Ibid., 8
and argue that it is still in need of further academic assessment, most notably of its often-mentioned characteristics of ‘freedom’ and ‘interactivity’, which point towards narrative possibilities for both communicating and experiencing intended and unintended narratives in ‘open world’ games.

1.1 Contextualizing ‘open world’ games
The ‘virtual environment’ forms one of the vital components of any video game. It is visually presented to the player and can be seen as the “computer-based simulated environment navigated and experienced by one or more users.”6 It is made possible by the technical systems, referred to by game developers as the ‘game engine’.7 According to game developer Jeff Ward, the game engine offers:

> Reusable components that can be manipulated to bring a game to life. Loading, displaying, and animating models, collision detection between objects, physics, input, graphical user interfaces, and even portions of a game’s artificial intelligence can all be components that make up the engine.8

Furthermore, the game engine determines the possible size, detail and amount of interactivity (or rules) within the virtual environment. In short, it is responsible for creating a virtual environment to serve as a container of a possible narrative, and a limited amount of possibilities for interaction within that space.

In older video games, partially due to the technical limitations, the virtual environment often consists of an ‘x and y’ axis, creating a two-dimensional environment for the player to move in or interact with.9 Though technically limited, many early games contain elements in the game’s virtual environment pointing towards a larger, fictional world. These elements can be described as objects, characters, signs, etc., which indicate a fictional world. Though there are countless examples of such elements being embedded in the virtual environment of early video games, I will briefly analyze two prominent examples in the early action game “Mario Bros.” (1985, Nintendo) and the adventure game “Zelda: A Link to the Past” (1990, Nintendo).

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8 Ibid.
In *Mario Bros*, players can move the character of Mario from left to right and jump over obstacles. Because of this, the player is only allowed to follow an environmentally *linear* path: he or she is provided with one mission; reach the finish line at the end of the path. Players also have the ability to run or duck, and are allowed limited interaction with the environment: blocks can be smashed and some objects can be picked up and thrown. As can be seen in figure 1, elements like the wooden blocks, pipes, a blue sky, clouds, hills, bushes and characters already hint towards a virtual world beyond the linear path.

![Figure 1. The linear path of “Mario Bros.” (1985, Nintendo)](image1)

In the game *Zelda: A Link To The Past*, the virtual environment is presented from a top-down perspective, giving the player a two-dimensional, yet environmentally more *non-linear*
experience of the game: the player can move the character of Link up and down and from left to right. The possibilities for interaction are also more complex than in Mario Bros.: the player can control an inventory of different items, use different weapons to destroy or pick up objects, find keys to locked doors or chests and interact with computer-controlled characters through dialogue boxes. It is clear that the game also points more strongly towards a large fictional world: aside from embedding elements in its virtual environment, such as houses, dungeons, signs, mountains etc., the game also contains a textual narrative in the form of a dialogue, as can be seen in figure 3.

![Image of Mario game](image)

*Figure 3. Dialogue boxes reveal a textual narrative.*

As technology advanced, the game engines became more powerful, and started offering possibilities for creating a three-dimensional virtual environment, creating ‘x, y and z’ dimensions. The game “Super Mario 64” (1996, Nintendo) is the first Mario game to not only offer this three-dimensional experience of the fictional world of Mario, it also offers a stronger environmentally non-linear experience: players can choose their own route through the game, being afforded quite some three-dimensional freedom in their movement. This development ‘opened’ the fictional world for three-dimensional environmental exploration, instead of having to complete a linear 2D mission.
Figure 4. The player can (relatively) freely move in a three-dimensional virtual environment.

As can be seen in figure 4, the main virtual environment in Super Mario 64 exists of a garden and castle, containing many rooms, each offering different missions that can be accessed in any desired order. In Super Mario 64, the large, fictional world is not only hinted at, but is actually available for the player to virtually explore and interact with in countless ways: the player can let Mario climb trees, swim in water, fly through clouds, pick up blocks etc., without completing any missions or objectives set by the game. The concept of an ‘open world’ refers to this availability of a free-to-explore, open environment for the player.

The term ‘non-linearity’ in the case of ‘open world’ games refers to the vast, free-to-explore environment, which can be discovered or explored in a non-linear fashion; there are multiple pathways to choose when exploring the narrative space. This is different from non-linearity in a textual sense, which means players have the option to choose a pathway inside a textual structure, which will be further discussed in the second chapter. Non-linearity in a textual structure can exist alongside environmental non-linearity, but is not specific to ‘open world’ games.

Games containing this ‘environmental non-linearity’ are sometimes referred to as ‘sandbox games’. The metaphor of a sandbox refers not only to the ability to freely explore the virtual environment, but also to the ability to interact with the virtual environment using materials (the ‘sand’ in this metaphor) to construct architecture and possibly a narrative.

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The concept of providing this agency by letting the player wander off the main storyline or intended path proved to be a very attractive feature and has grown ever since. As Ubisoft founder Yves Guillemot confirms: “The growth of choice that gamers crave means open worlds should get bigger, better and more prevalent. All those elements are so aligned with what people want that I feel it’s going to grow quite dramatically.”

Since the year 1996, the virtual environments powered by the game engines have indeed grown tremendously. Where *Super Mario 64* provided one castle and a garden in terms of virtual environment, the adventure game “Assassin’s Creed: Unity” (2014, Ubisoft) covers the *entire* city of Paris, as developer company Ubisoft claims on its website:

> The recreation of the city of Paris in Assassin’s Creed: Unity is more than just a framework, it serves as an engaging game world on its own. Famous architecture is recreated with an eye for great detail and precision. Every quartier in Paris has its own atmosphere and inhabitants. The enormous crowds come to live with the focus on individual civilians. Paris is the biggest city we’ve recreated in any Assassin’s Creed game, and is the largest and most complex open world game we’ve ever delivered.

*Figure 5. The ‘open world’ of Paris, visualized in great detail by the power of the game engine.*

Though still containing ‘main missions’ or ‘textual narratives’ for the player to complete, many so-called ‘open world’ games encourage the player to take time and wander off the linear path, just to explore the environment. The game “Assassin’s Creed: Blackflag” (2013, Ubisoft) offers an example of such encouragement, as lead designer Ashraf Ismail explains:

> With Black Flag, we want players to be completely lost in the Caribbean. What I mean is, you have a mission that is at the top of the map, but when you move in that direction the game world will keep inviting you to move off that path without you knowing it. Maybe if you find

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yourself, 45 minutes later, nowhere near that mission start, but you've done a bunch of harpooning and found a bunch of treasures and updated the Jackdaw. Not only do these ‘open world’ games continue to become bigger and offer more possibilities for exploration, they also offer more possibilities for interaction with both characters in the environment, and the environment itself. The military simulation game “Armed Assault 2” (2009) serves as a good example of the growing complexity and possibilities for interacting with other characters. In the game, the player controls a soldier and is free to move from town to town. When entering a new town, the player must interact with the computer-controlled local people (called ‘NPC’s’). Developer Paul R. Statham explains the complexity of the possible interactions:

If an NPC witnesses something in the game, even if it’s something the gamer doesn’t see themselves, then the NPC will remember. If, for example, an enemy squad moves through a town twenty miles from where the gamer is, the NPCs in the town will observe this. When you enter the town a couple of hours later, you can ask them if they’ve seen any enemy presence, and they’ll tell you that they saw an enemy squad moving west about two hours ago – if they’re friendly to you. Perhaps they know that you killed a civilian in the next town across, so they won’t tell you anything at all, or they’ll lie to you to set you up for an ambush by the enemy.

An example of the complexity of interaction between the player and the environment itself can be found in the ‘open world’ adventure game “Far Cry 3” (2013, Ubisoft), in which the player can burn down entire forests, affecting all the objects in range of the fire. Video game programmer Jean-Francois Levesque explains the complexity of this environmental interaction:

When a cell burns, it sends an “I’m on fire and I burn this much in this radius” message down the game event pipeline. This event is caught by objects, AI (artificial intelligence) and other game systems that are in that area. They react to this message in their own specific ways: the AI freaks out and the flammable objects get damaged and eventually catch fire. (…) This

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causes a chain reaction effect where trees, explosive items, objects and patches of grass set each other on fire.\textsuperscript{15}

\begin{figure}[h]
\centering
\includegraphics[width=0.5\textwidth]{fire_spread.png}
\caption{A schematic view of how the fire spreads when there is no wind in “Far Cry 3”}
\end{figure}

The progression towards more and more complex interactions and large-scale environments is still on-going. One of the most recent examples of the ever-growing complexity of interaction within ‘open world’ games can be found in the role-playing game “The Witcher 3: Wild Hunt” (2015, CDProjektRed). Developer Peter Gelencser even refers to its complex virtual environment as an ‘ecosystem’:

\begin{quote}
It’s a living and breathing ecosystem of thousands of characters inhabiting its corners. Everyone in the city, thugs, beggars, lords and thieves, have their day and night activities and pastimes. They make all of Novigrad’s four districts unique and exciting places. Worlds within a world to explore.\textsuperscript{16}
\end{quote}

Because not all video games offer an ‘open world’ for players, the concept is sometimes described as a genre or a category within video games.\textsuperscript{17} Even though not all games follow this development, most mainstream game developers are now trying their hand at creating one, and it is considered a trend within the video game industry.\textsuperscript{18}

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1.2 Current informal definition of the ‘open world’ concept

Despite the popularity of the ‘open world’ category or genre, it has yet to be assessed in formal, scholarly terms. As the above citations show, the already existing definitions are of a journalistic nature in the form of (informal) articles and online discussions among gamers and game developers.19

Game journalist Cory Janssen describes the ‘open world’ mainly as:

A style of game in which minimal character limitations are placed on the gamer, allowing the gamer to roam and change a virtual world at will. In contrast to a progression-style game, a sandbox game emphasizes roaming and allows a gamer to select tasks. Instead of featuring segmented areas or numbered levels, a sandbox game usually occurs in a “world” to which the gamer has full access from start to finish.20

Janssen justly positions ‘open world’ games as opposite of ‘progression-style’ games, and uses the term ‘sandbox’ as an interchangeable term for ‘open world’, pointing towards a non-linear environmental experience.

Game journalist Samantha DeMeste points towards a narrative possibility of this experience, as she points out that ‘open world’ games “allow a player to visit the places he or she wants to visit when he or she wants to, and it is that level of control that helps the player feel more intertwined with his character.”21 The term ‘character’ in this case refers to a character in a narrative, or ‘individuated existents’ as mentioned by Ryan.22

Though the terms ‘open world’ and ‘sandbox’ game are often used as interchangeable terms, game designer Chelsea Hostetter argues for a clear distinction between the two. Though they both provide the experience of environmental non-linearity, she claims that ‘open world’ games are created by the rules, whereas in sandbox games, the rules provide a scaffold which frames the user’s creativity or freedom. She argues that:

The distinction is in what users make out of the game. Legend of Zelda: Ocarina of Time is an experience created by rules; I have a main storyline I can follow, things I can buy, and a world that I can explore. All of my imagination and creativity must fit within the context of these

rules. I can pretend that Link is going on a quest to open his own hot dog stand, but in the end, the plot will drive me to save Hyrule. Minecraft, however is a scaffold with which to hold its user’s creativity.\textsuperscript{23}

In the case of ‘open world’ games, Hostetter claims that the intentions of the game designers are ultimately enforced upon the player in the form of obligatory linear progression (the ‘progression style’ games as mentioned by Janssen) in the main missions. It can therefore be questioned how ‘open’ ‘open world’ games are if the story is ultimately imposed from a top-down position of the game developers as an \textit{intended} narrative. It doesn’t leave much freedom to do something else, despite the allowed spatial freedom to move around. In ‘sandbox games’ however, players are offered not only the spatial freedom, but also have the ability to completely construct their own narrative space \textit{and} narrative. This freedom to create allows for unintended missions or narratives; the game engine serves as a scaffold to provide possibilities for interaction with the environment and other players.

Journalist Dawson Melo-Geldart coins the term ‘player narratives’ to refer to these self-made objectives, missions or structures that are created by players in ‘sandbox’ games. He also claims this changes the role of the game developers and players:

\begin{quote}
Instead of players subverting the developer’s intended narrative to create their own, these developers now focus their energy on designing an expansive, usually procedurally-generated, world and a set of interesting, exciting, sometimes challenging, but nonetheless unrestrictive mechanics, and letting the player or community create the narrative and the mechanics of player interaction.\textsuperscript{24}
\end{quote}

These player narratives have also been described in more academic literature by new media scholar Sebastian Domsch, who describes the narrative inside ‘sandbox’ games as a plastic element in which players can inscribe their own narratives. Domsch states that in these sandbox games “the spatial form of the gameworld depends on the dynamic computation of the laws of physics (however simplified) in response to the actions of the player.”\textsuperscript{25} He suggests that it is the game engine which provides simplified physical laws the player can use to create a narrative or narrative space. Player narratives are then created by the interaction

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\textsuperscript{25} Domsch, Sebastian. \textit{Storyplaying: Agency and Narrative in Video Games}. Berlin: Gruyter, 2013. 85
\end{flushright}
with the game engine. In ‘open world’ games, this engine is sometimes combined with a top-down narrative, which restricts the possible interaction in order to keep the player within the context of the intended narrative.

For the purpose of this thesis, I will regard sandbox games as a subcategory of ‘open world’ games. Although I agree with Hostetter’s distinction, my focus in this thesis is on the narrative possibilities created by the experience of environmental non-linearity, which is part of ‘sandbox’ games as well as open world games in general. Thus, a clear distinction is problematic, since most ‘open world’ games offer both intended narratives and offer players the ability to create their own narratives, structures or missions. This intertwining of intended and unintended narratives will be discussed in greater detail in the third chapter.

At the time of writing, a general, informal definition can be derived from the already discussed articles and online discussions, showing several often-mentioned characteristics of ‘open world’ games:

- The game offers a large, virtual environment.
- The game is non-linear, meaning the player is free to roam the virtual environment.
- The game communicates a sense of ‘unity’ (the ‘open world’ is rendered as a unity without any loading times or segmentation between different areas within the open world).
- The ‘open world’ is interactive and reacts to the player’s actions.

It is important to note that the abovementioned qualities are all necessary conditions, which as a whole serve as sufficient conditions for a game to classified as an ‘open world’ game. This distinguishes ‘open world’ games from other (earlier) works which also offer a virtual environment that can be explored. Only the most recent technologies allow for such vast and detailed environments, combined with complex possibilities for players to interact with the virtual world.

From this list it’s possible to distill two technical characteristics, both referring to the processing power of the game engine, namely the large virtual environment rendered as a whole and the physics within the environment for allowing or disallowing certain actions. It’s also possible to distill two experiential characteristics: the sense of ‘freedom’ or ‘non-linearity’
and the experience of ‘interactivity’ with the environment and characters. These listed experiential characteristics, formulated by the game community, are the cause of further possibilities for experiencing, creating and communicating a narrative inside the large, fictional world of the game. To further understand this narrative potential in ‘open world’ games, it is important, first, to look at how the environment can be used to communicate a narrative in video games in general, and then to look at what open world games specifically add to these narrative possibilities.

1.3 Fictional world in ‘open world’ games
Though the term ‘open world’ is relatively new, letting the user freely explore the virtual environment in video games is a well-known concept and has already been discussed in scientific articles. Among others, game designer and scholar Don Carson writes about how creating a virtual environment can borrow from the way in which the environment is used in popular theme parks to convey a story:

One of the trade secrets behind the design of entertaining themed environments is that the story element is infused into the physical space a guest walks or rides through. In many respects, it is the physical space that does much of the work of conveying the story the designers are trying to tell. Color, lighting and even the texture of a place can fill an audience with excitement or dread.26

When creating any video game, developers also ‘infuse’ the virtual environment with an overall fictional theme which the player gets to interact with. According to new media scholar Henry Jenkins, the use of a general fictional theme in the virtual environment can be seen as ‘environmental storytelling’. In his essay “Game Design as Narrative Architecture” he claims that the virtual environment can create the pre-conditions for an immersive narrative experience in at least four ways27:

- It provides a staging ground.
- It evokes pre-existing narrative associations.
- It embeds narrative information within their mise-en-scene.
- It provides resources for emergent narratives.

Jenkins’ article doesn’t discuss ‘open world’ games in particular, but offers a general description of environmental storytelling. I will use this description in the third chapter to demonstrate the intensive role of ‘environmental storytelling’ in ‘open world’ games and further add to his conception of how the environment can be used to deepen the narrative experience.

The ‘open world’ adventure game Assassin’s Creed: Unity offers a clear and recent example of how ‘open world’ games can easily provide Jenkins’ proposed preconditions. Firstly, it uses the real-world city of Paris during the French Revolution as its main staging ground. Secondly, it evokes historically triggered narrative associations by placing enormous protesting crowds on famous squares, showing random fights that break out between people and royals, and presenting torn-up houses and chaotic streets. Lastly, it embeds narrative information in the game’s mise-en-scene by placing mysterious signs throughout the city or showing blood traces and other objects that can be inspected and narratively speculated by the player.

According to Jenkins, when the above preconditions are present, “evocative spaces” are created, from which narratives can be evoked. He also refers to these surfacing constructions as “narratively-compelling spaces”.\(^{28}\) Because all ‘open world’ games use their environment even more intensely than the discussed progression-style games (or ‘closed world’ games, which Jenkins refers to), it becomes clear that they offer strong environmental narrative possibilities for communicating or experiencing a narrative.

### 1.4 Towards an overview of environmental narrative possibilities

When reviewing the existing definition as discussed earlier, it becomes clear that the ‘open world’ concept is in need of a further scholarly assessment. While much has been written about the exploration of the virtual space (in video games) in general, the focus is usually on closed environments and not specifically on ‘open world’ games. Therefore, the narrative possibilities that come with a free-to-explore, vast and complex, open environment are easily overlooked.\(^{29}\)

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\(^{28}\) Ibid., 120

\(^{29}\) Some examples of literature focussing mainly on narrative possibilities within ‘closed world’ games.


However, in open world games the exploration of the virtual environment takes on a different role and provides different narrative possibilities than it does in ‘closed world’ games or virtual environments, and therefore deserves an exclusive analysis.

Free exploration of the virtual space is an essential component of the experience of freedom provided by open world games, and therefore an essential point of interest for the analysis of the narrative possibilities of open world games.

There are many different aspects of the ‘open world’ concept which might be focused on when working towards an academically formulated definition. However, because ‘open world’ games strongly depend on the creation of a fictional world and the narrative possibilities within them (such as offering narratively compelling spaces) the environmental narrative possibilities should form a vital part of this definition. The listed characteristics of ‘open world’ games, such as ‘freedom’ and ‘interactivity’, already hint towards environmental narrative possibilities. These possibilities need to be further explained and assessed. Therefore, by providing a close-analysis of several prime examples of ‘open world’ games, I aim to answer the main research question of this thesis:

Which narrative possibilities does the experience of environmental non-linearity in open world games provide?

In answering this main research question, I will pay special attention to the way in which the environment is used in ‘open world’ games. I will analyze how the environment can help the players understand an intended narrative in the game by the game developers, and how ‘open world’ games can provide ‘narratively compelling’ spaces in which narratives may be created, generated or triggered by the players as unintended ‘player narratives’. This assessment can be used to further explain the ‘open world’ concept. Thus, my subquestion is:

How can this assessment of environmental narrative possibilities explain the often-mentioned characteristics of ‘open world’ games, such as the experience of ‘freedom’ and ‘interactivity’?

By using my distilled list of environmental narrative possibilities within ‘open world’ games, I aim to contribute to a more precise and formal definition of the ‘open world’ concept. Before close-analyzing specific examples of narrativity in ‘open world’ games, I will introduce my research method and provide a working definition of the term ‘narrative’ in the next chapter.
Chapter 2: Research method

In this chapter I will discuss the research method I will use for close-analyzing the environmental narrative possibilities within ‘open world’ games. In the first paragraph I will discuss my method for analyzing ‘open world’ games as interactive artworks and focus on the subjective experience of playing the game. In the second paragraph I will discuss a working transmedial definition of the term ‘narrative’ and make a clear distinction between intended and unintended narratives in ‘open world’ games.

2.1 Analyzing interactive artworks

The term ‘interactivity’ in relation to new media is described by new media scholar Martin Lister as “a more powerful sense of user engagement with media texts, a more independent relation to sources of knowledge, individualized media use, and greater user choice.”

In this thesis, the focus will primarily be on interactivity as user choice in ‘open world’ games. This choice can be present, both in a textual structure (directly affecting a textually communicated narrative) or in a spatial sense (the freedom of choice in movement through the virtual space). As will become clear throughout this thesis, the interactive qualities of ‘open world’ games directly cause the experience of non-linearity, as will be further discussed in the second paragraph of this chapter and in the third chapter.

To scrutinize ‘open world’ games as interactive works, I will shortly discuss two distinct kinds of interactivity that are used in video games.

Interactivity in the textual structure (or ‘hypertextual navigation’) means the user has a choice between different pathways inside an intended narrative. By interacting with a digital text and choosing different paths, “the user constructs for him- or herself an individualised text made up from all the segments of text which they call up through their navigation process.” This hypertextual narrative is often present in ‘open world’ games in the form of dialogue boxes, as we will see in the third chapter.

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31 Ibid., 21
The spatial navigation (the environmental non-linearity) can be described as a form of immersive interaction: instead of extracting information through textual choices, the user is immersed by way of choosing a pathway through a virtual reality environment.\textsuperscript{32} In this form of interactivity, the user gets to experience the virtual environment in a non-linear fashion.

Because of the experiential and individual nature of these two types of interactivity or non-linearity, it is important to approach ‘open world’ games from a subjective, experiential perspective. Therefore, I will turn to Kwastek’s method of putting the emphasis on the \textit{subjective experience} of such works.

In her book “Aesthetics of Interaction in Digital Art”\textsuperscript{33}, Kwastek explains that traditional works of art, ones that are not interactive, are perceived by an audience of outside observers. Such an audience is more inclined to interpret and reflect and does not interfere with the work itself.\textsuperscript{34} Thus, when analyzing such traditional artworks, the emphasis is more often put on the object itself, more so than on the subjective interference or experience of individual observers. For analyzing interactive artworks, however, Kwastek suggests a different model might be needed, because of the different relation between the artwork and its audience.

In the case of an \textit{interactive work}, the audience being given the agency of choice (or input), which means there is direct interference between the audience and the artwork itself. Interactivity, according to Kwastek’s method, points towards that \textit{interactive} relation between the audience and the artwork. The main difference between an interactive artwork and a non-interactive artwork is the requirement of this agency to interfere with the work itself in order to realize the artwork. For the realization of non-interactive artworks, this direct interference is not required.

Although it may be argued that the subjective experience of the audience should be an important part of the analysis of all artworks, this is even more important when it comes to interactive artworks, because of this vital role of the audience in the \textit{realization} of the artwork.\textsuperscript{35} Thus, as a method for analyzing these works, Kwastek suggests to put the emphasis on the more important role of the subject instead of the artifact. She suggests that if we “shift

\begin{itemize}
\item \textsuperscript{32} Ibid., 23
\item \textsuperscript{33} Kwastek, Katja. \textit{Aesthetics of Interaction in Digital Art}. Cambridge, MA: MIT, 2013.
\item \textsuperscript{34} Ibid., 101
\item \textsuperscript{35} Ibid., 158
\end{itemize}
the perspective from the artifact to its reception, then access becomes easier in interactive art because the reception manifests itself at least partially in observable behavior, which, moreover, is channeled in particular directions by the technical systems involved.”36 She goes on to write that by “eschewing the ideal of putative objectivity”, her method is suitable “to gain access to the object and to its aesthetic experience.”37

Drawing from Kwastek’s proposed method, I will take into account two factors when close-analyzing ‘open world’ games in the third chapter:

- The technical systems behind the game: in ‘open world’ games this is the ‘game engine’, as discussed in the first chapter (including possible intentions by the game developer)

- The experience of the player.

I will further assess the earlier mentioned (informal) experiential characteristics of ‘open world’ games such as ‘interactivity’ and ‘freedom’ using these two factors.

2.2 A working definition of the term ‘narrative’ in relation to ‘open world’ games

In order to understand and discuss these narrative possibilities of ‘open world’ games, it is also important to provide a brief working definition of ‘narrative’.

Older definitions of ‘narrative’ often describe it as a form of representation of a sequence of events, which unfold over time. This makes a narrative a linear concept, as it can be represented, and thus the events, from which a narrative is derived must have been already determined.

A prime example of such a definition is the one provided by narratologist Gerald Prince. In his work “Narratology: The Form and Functioning of Narrative” he claims that “narrative is the representation of at least two real or fictive events or situations in a time sequence, neither of which presuppose or entails the other.”38 He goes on to write about the importance of a narrator and states that: “There’s at least one narrator in any narrative and this narrator may or may not be explicitly designated by an ‘I’.”39

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36 Ibid., 100
37 Ibid., 105
39 Ibid., 8
In the case of traditional (non-interactive) media, the events, from which a narrative is derived, happened in the past and are therefore already determined or ‘given’. This may give rise to the idea that, since a narrative in traditional media is linear, the audience does not interfere with the events at all. However, although an audience does not actually change the events themselves, they do mentally process the represented events; thus interference is not completely absent, even in non-interactive artworks. The audience’s elaboration and mental processing may still interfere with the traditional non-interactive work of art, through the interpretation of its narrative. As film historian and theorist David Bordwell argues in his proposed ‘inferential model’, the shown images in a film cue a mental process.\footnote{Bordwell, David. "Three Dimensions of Film Narrative." Poetics of Cinema. New York: Routledge, 2008. 9-10.} He states that when “given a representation, the spectator processes it perceptually and then elaborates it on the bases of schemas she or he has to hand.”\footnote{Ibid.} A narrative in traditional media is therefore still dependent on the audience’s active mental processes and schemata from real-life experience to interpret the represented events. Thus, in this process of elaboration, the audience may still ‘interfere’ with the represented linear events, and form their own interpretations based on their real-life experiences.

In the case of new interactive media, however, the events themselves might still have to be triggered or generated through interaction with the work itself, and are therefore not yet determined (as discussed in the first paragraph), which means they are non-determined, fluid and therefore non-linear. Interactive media do not re-present fictive situations in a time sequence, but require input from the user to realize or actualize a sequence of events which may lead to a narrative.

that “the idea that narrative and interactivity oppose each other springs from a definition of narrative as linear storytelling”. Without delving further into this debate, it is clear that for analyzing narrativity in video games, a definition of a narrative is needed that allows the possibility of an interactive, non-linear narrative, in which events still need to be actualized through interactivity.

In order to tackle these shoreless debates, Ryan has proposed a different kind of definition for ‘narrative’; one that is transmedial and not only limits itself to traditional text-based and linear definitions (or to the “speech-act approach”, as she calls it). In her book “Avatars of Story”, she states that defining the term ‘narrative’ is problematic because different scholars use different definitions and have different requirements for what constitutes a narrative. Thus, she proposes a ‘toolkit’, consisting of narrative ‘ingredients’ from which a possible definition can be formed. She provides a list, divided in three semantic and one formal and pragmatic dimensions.

Spatial dimension:

- Narrative must be about a world populated by individuated existents.

Temporal dimension:

- This world must be situated in a time and undergo significant transformations.
- The transformations must be caused by non-habitual physical events.

Mental dimension:

- Some of the participants in the events must be intelligent agents who have a mental life and react emotionally to the states of the world.

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45 Ibid., 6
- Some of the events must be purposeful actions by these agents, motivated by identifiable goals and plans.

Formal and pragmatic dimension:

- The sequence of events must form a unified causal chain and lead to closure.
- The occurrence of at least some of the events must be asserted as fact for the story world.
- The story must communicate something meaningful to the recipient.\(^{46}\)

Because the list contains *transmedial* qualities of a narrative and does not require it to be represented through text or to be narrated, it can also be applied to interactive media and video games in particular. This is why I will use this definition to ‘measure the narrativity’ in several ‘open world’ games through close-analysis, and see how the non-linear environment provides conditions in which narratives can be *created or triggered*.

Ryan also emphasizes the distinction between something “being a narrative” and “having narrativity”.\(^{47}\) The first requires the receiver’s recognition of the *intention* to evoke a story in the mind of the audience and uses a form of narration. This narration means the story is intended and communicated by an author. The latter “means being able to evoke such a script, whether or not there is a text, and if there is one, whether or not the author intended to convey a specific story.” Something ‘having narrativity’ means certain circumstances give rise to an unintended narrative, which is neither intended nor communicated by an author.

Applying this distinction to the field of my study, I will make an important distinction between different ways in which a narrative can be communicated or triggered in ‘open world’ games, namely between ‘intended’ and ‘unintended’ narratives.

I will regard intended narratives as narratives directly communicated by the game developers (the authors) to the player, either through the use of a script (a ‘textual narrative’) or by narrative elements in the game’s virtual environment. In many ‘open world’ games, the script can be triggered by moving to a marked location in the environment. The ‘open world’ game “Grand Theft Auto: V” (2013, Rockstar) provides an example of this triggering system, as the

\(^{46}\) Ibid., 8
\(^{47}\) Ibid., 11
player can move to different markers on the map. When he or she arrives at the particular location in the virtual environment, the textual script is triggered and activated. As can be seen in figure 7, there are multiple letters on the in-game geographic map of the virtual environment, indicating the starting location of a scripted (and intended) narrative for the player.

![Figure 7. The in-game map shows letters as marked locations to trigger parts of the textual narrative in GTA: V](image)

Because of the interactive nature of video games, the textual narrative can be non-linear. In a textual narrative context, ‘non-linearity’ entails that the player has the ability to choose different paths in a “textual architecture”, which makes for an interactive experience for the player with the communicated story. The actualization of the narrative depends on the interaction with the player through choice. According to Ryan, such a non-linear structure exists of both a top-down textual architecture and user-input. From this combination, a version of the story can be generated or actualized.

Ryan goes on to demonstrate different ways of designing the top-down architecture. Some forms may influence the way (the ‘discourse’) in which the story can be communicated, while others affect the different possible outcomes of the story itself. Since ‘open world’ games often focus on the story of one player-controlled character, the overall discourse within the architecture is fairly straightforward: the story centers around one main character and is told

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49 Ibid., 99
50 Ibid., 100
chronologically. This means that the more suitable ways of discourse and outcomes are those which allow this continuity in storytelling.

One of the more suitable ways of designing the textual architecture for an ‘open world’ game is the ‘plot as state-transition diagram’. In this plot, the “the horizontal axis stands for a timeline punctuated by the events that change the global state of the storyworld, while the vertical axis could be used for the description of the individual states.”

These individual states are formed by different events occurring in chronological order. Ryan also notes that in such a plot graph, the “plotline is reduced to the collective destiny of the storyworld, and its representation of events is limited to what actually happens.” This perfectly suits the continuity often provided in ‘open world’ games: the story is told on a chronological timeline on which different events may occur.

Since ‘open world’ games provide a large, non-linear environment, the discourse model described by Ryan as a ‘sea-anemone’ is also particularly useful, as it allows different branches of the textual architecture to still be connected, while ‘scattered’ around the vast, non-linear environment in the form of smaller, individual narratives that enrich the story. These individual narratives can then be triggered and explored, while not being necessarily directly connected to the main storyline.

As another way of navigating through the story, Ryan offers the possibility of a vector with side-branches. This offers a sequential, linear progression but with options to “branch toward external materials or optional activities that enrich the story.” This enrichment is also used in ‘open world’ games, in combination with the ‘sea-anemone’ model, and will be further discussed and applied in the third chapter.

Also important to note is the ‘plot as travel points in a storyworld’. The different points scattered throughout the map suggest a journey or “itinerary through the geography of the storyworld.” As will become clear in the third chapter, this type of architecture is often provided in ‘open world’ games in the form of a geographic map, which provides points of interest as different parts of the narrative in specific places inside the storyworld.

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51 Ibid., 101
52 Ibid., 99
53 Ibid.
Lastly, an interesting model for the way in which a story can be communicated is the “track switching system’ with interwoven destiny lines. In this system, “every strand is linked to every other strand at certain decision points, but the links follow the temporal flow of the story and never take the reader back in time.” In the case of some ‘open world’ games, there are multiple playable characters. This track switching system can be used to switch between characters while maintaining the continuity in the chronological timeline.

Ryan also offers some models which are used to progress through the story. In the case of ‘open world’ games, the most effective model is the tree-model, which we will see is often combined with the flowchart model.54 The tree model suggests multiple threats (or branches) that can be chosen, which allow new pathways and close off others. These lead to different endings, and each decision in the tree permanently closes other branches. In order to retain the exponential number of outcomes of each individual decision inside the tree model, it is often combined with the flowchart model, in which different choices ultimately lead to the same outcome.

In contrast to intended narratives provided by these types of top-down textual architecture in ‘open world’ games, unintended narratives are created by the player through interaction with the game engine (and thus by exploring the virtual environment), from which ‘player narratives’ may emerge. Therefore, there is no script or textual architecture involved, only player interaction with the environment. ‘Non-linearity’ in this context means the ‘openness’ of the game engine, which is proportional to the amount of possible interactions within the virtual environment. In this way, players may construct or build their own container (or diegetic space) in which they may construct their own textual narratives as well. Because the game engine is part of the virtual environment, I will consider this ‘openness’ of the game engine as part of the ‘environmental non-linearity’.

Chapter 3: Close-analyzing environmental narrative possibilities in ‘open world’ games
In this chapter I will close-analyze the narrative possibilities that come with providing the player with a non-linear environmental experience in ‘open world’ games. First, I will discuss how an intended narrative may be communicated and experienced through the use of the

54 Ibid., 105.
game’s interface and the large, non-linear environment. Secondly, I will discuss how the environment itself can be used to help communicate, trigger, generate or create intended and unintended narratives, using Jenkins’ notion of “environmental storytelling”. Lastly, I will discuss the possibility in ‘open world’ games for providing a complex intertwinment of both environmental and textual non-linearity and the combination of unintended and intended narratives that may form the base of the experiential characteristics of ‘freedom’ and ‘interactivité’ in ‘open world’ games.

3.1 Possibilities of environmental non-linearity for communicating and experiencing an intended narrative

The ability to use the ‘game world interface’ and a geographic map

When communicating an intended (textual) narrative (created by the game developers), ‘open world’ games have the ability to use their environment as a ‘narrative map’ to help players understand an intended narrative.

Media scholar Stephen Mamber offers a simple and broad definition of narrative mapping in his essay “Narrative Mapping” (which appeared in the anthology “New Media: Theories and Practices of Intertextuality”). He defines the concept as “an attempt to represent visually events that unfold over time.” He states that this can be of both real life and fictional events, and goes on to write that the outcome of narrative mapping is a constructed information space “that provides a formulation of complex activities”. This information space offers an orienting experience and provides an overview of activities or events that form (or envelop) a narrative. Furthermore, he offers different purposes a narrative map may have, all leading to a better understanding of the intended narrative that is ‘mapped’. As a most prominent use in relation to digital media (and thus ‘open world’ games), Mamber mentions the ‘interface’ as an important way of providing a narrative map:

It can serve as a navigation guide to a set of underlying materials and experiences. Whether one is playing a video game, exploring a museum collection, or reading a web-based

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57 Ibid., 145.
58 Ibid., 145.
59 Ibid., 146.
newspaper, a well-designed interface will present an orienting representation of an underlying information model.\(^{60}\)

The term ‘interface’, as used by Mamber, refers to a system for interaction between the user and an underlying complex information model. What is visible on-screen and what is hidden behind it, like a database, or complex computer processes, is decided within the interface.\(^{61}\) The interface thus acts as a guide which hides these complexities and presents an understandable visual guide for interacting with complex databases or information systems. In video games, the interface takes the form of a system for interaction between the player and the complex game engine. The virtual environment can also form a part of the interface to guide the player, in order to understand the events and structure of an intended narrative.

Media scholar Kristine Jorgensen coins the term “game world interface” to describe this rather special utilization.\(^{62}\) In her essay “GWI: The Gameworld Interface”, she describes the ‘game world interface’ as a concept in which the virtual environment does not only function as a representation of a fictional world, but also as an interface between complex game mechanics (the game engine) and the player.\(^{63}\) She explains that the game mechanics, in the form of complex computer processes and difficult textual commands, are not user-friendly, and don’t allow an immersive experience of the virtual environment because they are not part of the game world itself. Therefore, she argues that the ‘game world interface’ can be understood as a metaphor behind the complex game systems, as it “contextualizes an abstract game system in the shape of a world that can be interacted with and explored.”\(^{64}\) This exploration simplifies the interaction with the complex game mechanics for the player, which allows for a more immersive experience of the game. Furthermore, she claims that the ‘game world’ can provide information of the technical systems behind the virtual environment in two different ways: by illusion of non-mediation and by augmenting symbols and signs in the virtual environment, making them a part of the game world itself.\(^{65}\) Augmented symbols form the clearest way of informing the player of possible interactions or to guide him or her through

\(^{60}\) Ibid., 148.


\(^{63}\) Ibid., 4

\(^{64}\) Ibid., 4

\(^{65}\) Ibid., 6
the environment, as they are placed in the virtual environment itself. The illusion of non-mediation is more subtle, and suggests a more natural environment the player can interact with as if in a real-life situation.

A good example of how these two ways are used in video games, and especially ‘open world’ games, can be found in the opening sequence of Assassin’s Creed: Unity. In this sequence (which follows the discussed plot as state-transition diagram), the player is being taught how the game world interface functions. The player can move the young character of Arno, who must steal an apple from a palace guard, hide, and then escape the area unnoticed. When the player approaches the table containing the apples, the game world interface shows an augmented marker, and provides an image of the button the player must push in order to steal one.

![Figure 8. The “Steal an Apple” icon appears in the virtual environment itself.](image)

When the player picks up the apple, the guard comes out and spots Arno. The next objective is to hide from the guard. In this case, the game world interface doesn’t provide any augmented information and thus the player must ‘naturally’ find a hiding spot, using only the environment itself. Standing behind a bush, for example, or ducking behind a wall, will suffice to break with the guard’s line of sight. Behind this ‘immediate’ interaction with the environment a technical system is hidden, and thus the illusion of non-mediation is created:
the player doesn’t experience an interface between him or her and the interactions with the
virtual environment. When running away from the guard, an augmented ring appears around
the player, pointing towards the location of the guard in order to help the player orientate
and to avoid a confrontation. Furthermore, the game shows the ‘last-known position’ of the
player in the form an augmented silhouette in the environment. The guard investigates the
last-known position when the player tries to escape. In this way the augmented symbols
provide information to help orientate the player and thus help to better understand a possible
intended narrative.

Figure 9. An augmented ring around the player and a silhouette showing the last-known position.

Another way in which an ‘open world’ game can help communicate an intended narrative is
by using pop-up messages as visual overlays to provide additional information for the player,
as can be seen in figure 9. This way, the game can provide tips on how to deal with the game
world interface and inform the player of current objectives or missions in the vast, non-linear
environment.

In the left corner of the screen, the player is provided with a geographic map of the
surrounding area, showing the location of the guard. In Assassin’s Creed: Unity, a geographic
map is available in two different forms: by overlay, providing a map of the immediate area the
player finds him- or herself in, and by an accessible menu, providing a very detailed geographic
map of the entire narrative space. This helps the player ‘navigate’ through the intended narrative in the game.

The map depicted in figure 10 represents the earlier discussed ‘plot as travel points in a storyworld’: the various points of interest marked on the geographic map of the storyworld also point to where the narrative events takes place. Moreover, the player progresses chronologically through the story by visiting these points of interest in the form of the sea-anemone model: different parts of the narrative are scattered throughout the storyworld, but are connected by one main narrative. The main narrative is indicated on the map with an exclamation mark (as depicted in figure 12).

Although the player is free to roam the entire city of Paris in Assassin’s Creed: Unity, the main narrative is still dominant: in the end, the player is forced to move to specific points and follow a linear textual architecture in order to progress in the game. The ‘openness’ is thus limited to the allowed movement through the environment. However, this freedom does create a more ‘open’ experience than in ‘closed world’ games.

Figure 10. The detailed map of the entire fictional world, which can be accessed at all times when playing “Assassin’s Creed: Unity”.

The possibility of ‘open world’ games to provide a geographic map of the intended narrative can be of great help when trying to understand and keeping track of a ‘planned story’ in the vast, non-linear environment. In her article “Cognitive Maps and the Construction of Narrative Space”, Marie-Laure Ryan writes about sketching a geographic narrative map of a novel, in
order to gain a better understanding of the novel’s intended narrative.66 When drawing a map of the detective novel “Chronicle of a Death Foretold” by Gabriel García Márquez as an experiment to better understand its narrative, it took her three readings to reach what she hopes “is a reasonably complete and accurate representation of the topography of the novel.”67 Ryan goes on to explain that she presents her map “not as the map but as one of the possible maps of the textual world.”68 In this way she indicates that mentally constructed maps on the basis of a narrative text can never be truly objective, but are always an interpretation of the limited clues a text can communicate about the narrative environment, and are thus subjective. In video games, however, the presented map can be an objective and crucial one to realize the intended narrative. The provided objective map in a video game does not depend on a personal attempt at mapping, but is added to the game by the game designers instead. Because of this, the map is given and objective, rather than being a subjective construct.

In ‘open world’ games, the player is more intensely trained to ‘get to know’ this objective map by heart, which is important since the offered non-linear environment serves as the entire narrative space of the intended narrative. Therefore, the first missions in ‘open world’ games often consist of the player having to find his or her way through the non-linear environment to a high viewpoint. This helps the player orientate him- or herself in the diegetic space of the narrative.

In Assassin’s Creed: Unity the player must climb to marked viewpoints on the geographic map to ‘unlock’ unexplored locations. This way, the player learns to use the environment as an interface to orientate him- or herself in the game’s entire narrative space. This is a unique ability of ‘open world’ games, since all intended narratives are set in this ‘free-to-explore’ environment.

67 Ibid., 218.
68 Ibid., 222.
Figure 11. The player is forced to find a high viewpoint in order to be trained in knowing the geographic map by heart.

Another way in which the geographic map may help to understand an intended narrative, is by allowing the player to track important characters and other ‘points of interest’ for the intended narrative.

In Assassin’s Creed: Unity, the character of Arno must uncover a conspiracy which, according to the game’s planned story, reveals who is responsible for his father’s death. This intended narrative is communicated by a textual architecture which can be triggered when the player moves to different marked locations on the map, as depicted in figure 12.

Figure 12. The exclamation mark shows the location to trigger the next part of the textual (intended) narrative of the game.
When the script is activated, the player is provided with textual instructions on different goals and objectives. Different parts of the textual architecture are divided in different ‘sequences’ the player must complete. When triggering one of the sequences in the textual architecture in the game, the player must retrieve information from Charles Gabriel Sivert, who might be responsible for the death of Arno’s father. After retrieving the information, the player is instructed to assassinate Sivert, which progresses the textual architecture. Using the game’s environmental non-linearity, the player is provided with countless ways to enact this mission, and is even encouraged to take time and fully investigate the area, as can be seen in figure 13.

![figure 13](image)

*Figure 13. The game’s interface provides tips and encourages environmental exploration.*

Using the geographic map provided in the interface, the player can track Sivert’s position in the diegetic space at all times. This allows the player to freely investigate different areas without losing track of the main target. The map also provides the location of different ‘points of interest’ for the player to explore in order to further understand the intended narrative.

Every assassination mission has countless points of interest which can be discovered when exploring the environment. In this particular mission, one of the points of interest is marked on the geographic map as a character holding a key to a secret entrance into the Notre Dame. As illustrated in figure 14, the ‘game world interface’ uses an augmented color around the character to indicate the key can be stolen.
**Figure 14. Augmented signs in the game world indicate points of interest to help the player orientate in the diegetic world.**

Entering the Notre Dame unnoticed using the stolen key will trigger the possibility to eavesdrop on an important conversation between Sivert and his accomplice, which gives the player further insight in the intended narrative. After hearing the conversation as part of the textual architecture, the player can choose to either assassinate the target, or head back out for further environmental exploration and investigation, before progressing in the main textual architecture.

Further exploration leads to new opportunities to retrieve extra information, and thus to acquire a better understanding of the intended narrative. In this case, the earlier discussed sea-anemone model, together with the vector with expanding branches are used to provide the player with the ability to enrich the experience of the story by further exploring extra information and even side-narratives.

Providing the player with the agency to either continue the sequential progression in the main textual architecture, or further investigate the environment to find expanding branches, also causes a sense of ‘freedom’ when experiencing the main intended narrative of the game. Even though the player is ultimately forced to follow the linear progression, ‘open world’ games still allow the player to do so in a non-linear fashion: environmentally the player is free to choose his or her path. This is not possible in closed-world games, in which the player cannot move freely inside a vast, non-linear environment.

‘Open world’ games have the ability to offer the experience of being able to ‘fully’ explore the narrative space, with only physical constrains that are known from our real-life exploration.
Because of this spatial freedom, players can retrieve information from the environment in order to understand an intended narrative. As I have illustrated, the use of augmented and immediate interactions with the ‘game world interface’, while also being provided with a detailed geographic map of the diegetic world, provides the player with a combination of unique tools to understand an intended narrative. Furthermore, it causes a sense of freedom to explore without having to progress in the textual architecture, since the player has the ability to wander off the intended path and gather more information through exploration.

**Environmental storytelling for communicating an intended narrative in ‘open world’ games**

This freedom to explore the environment in order to better understand the intended narrative is not limited to textual clues, as Henry Jenkins points out in his essay “Game Design as Narrative Architecture” when explaining his use of the term ‘environmental storytelling’. Jenkins writes that video games not only have the ability to use a textual structure to communicate a narrative, but can also use the environment itself to do so. Game scholar Sebastain Domsch aptly describes the term environmental storytelling as “the act of staging player-space with environmental properties that can be interpreted as a meaningful whole, furthering the narrative of the game”.

In this way Domsch suggests that the virtual space can be used as a storytelling device by placing meaningful objects inside the virtual environment. Domsch, as well as Jenkins, indicate that information can be derived from the environment, which may enrich or deepen the understanding of the intended story. To strengthen this claim, Jenkins goes on to explain that “the core narratives behind many games center around the struggle to explore, map and master contested spaces”.

Because this exploration of the environment is of great importance in ‘open-world’ games, his conception of ‘environmental storytelling’ can be used in a uniquely strong fashion to communicate, create or experience an intended narrative in the game’s non-linear environment.

In his article, Jenkins discusses in “what ways the structuring of game space facilitates different kinds of narrative experiences.” He claims that game designers are tempted to adapt stories from genres like fantasy, adventure, science fiction, horror or war, because the constructed

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72 Ibid., 121
spaces play an important role within these genres to help communicate the narrative. This is also the case for many ‘open world’ games. Jenkins mentions four different kinds of environmental narrative elements which he collects under the term “environmental storytelling”: evocative spaces, enacting stories, embedded narratives and evoked narratives or emergent narratives. I will argue that the first three categories can be used to help communicate an intended narrative and the last category allows for the creation of unintended narratives. Therefore, I want to make a distinction in the term ‘environmental storytelling’, and first discuss ‘intended environmental storytelling’ in this paragraph in relation to the experience of environmental non-linearity in ‘open world’ games. I will further elaborate on ‘unintended environmental storytelling’ as a separate concept in the second paragraph of this chapter.

**Evocative spaces and a ‘living environment’ in ‘open world’ games**

‘Open world’ games have the ability to create what Jenkins calls ‘evocative spaces’, as discussed in the first chapter. Jenkins claims that if a certain ambience is created in a space that complies with our expectations of a specific genre, it makes for a compelling space in which to tell an immersive story.

When discussing the design of the city of Paris as a virtual environment in *Assassin’s Creed: Unity*, art director and game developer Mohammed Gambouz implies how he wanted to visually create such an evocative space in which a narrative set during the time of the French revolution can be convincingly communicated:

> For example, we knew that during that era, there were fires, people being ransacked, there was burned furniture around the place, canon shots. It’s a very thick atmosphere. So in the game, we exaggerated that a bit more.

In video games that offer a linear experience of the environment, the use of evocative spaces to communicate a narrative is more limited than in ‘open world’ games. The technical possibility to create vast virtual environments, gives game developers the opportunity to

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73 In the case of *Assassin’s Creed: Unity*, the game could be categorized as an adventure and perhaps a war game (because of the displayed civil war-like qualities of the French Revolution).


75 Ibid., 122

create large, richly filled evocative spaces, and even metaphorically ‘living’ environments. Gambouz even refers to the city of Paris as a ‘character’ in *Assassin’s Creed: Unity*:

This is one of the most important pieces of the game, so we need to push as much personality and depth into the character of the city. So let’s have different facets of the same character.\(^77\)

Following this idea, Gambouz and his team of developers created different atmospheres in different areas of the city, making sure the environment makes for a compelling space in which the textual architecture can be triggered. Besides creating an evocative space, Gambouz also wanted to create what could be called a ‘living environment’:

We pushed everything that could bring life to the city. Whether it’s the number of the crowds, the believability of the architecture or by telling little stories here and there by putting in the name of the streets or little shops. It systematically creates depth, context and life.\(^78\)

To create what I will call a ‘living environment’, the developers make a distinction between the environment itself and the computer controlled inhabitants (NPC’s), reacting to the player’s actions in the non-linear environment. Gambouz suggests these NPCs will be much like actual people, living their lives:

Imagine we have a crowd-life and a market. People living their lives, doing their things. Once the narrative mission starts and you are following your target, it creates some chaos into all of that.\(^79\)

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\(^{77}\) Ibid.

\(^{78}\) Ibid.

\(^{79}\) Ibid.
Figure 15. A crowded market filled with NPC’s that react to the player’s actions in the environment and follow their own daily rituals, creates the experience of a ‘living environment’.

This creates another layer of environmental storytelling. The described chaos offers players the experience of a ‘living environment’, since the crowd reacts to the player’s movement or interactions when free-roaming the ‘open world’ of Paris. Not only do they react to the player, the NPC’s perform their own daily rituals, in spite of the player’s interference. The ‘living environment’ is a combination of an evocative space and NPC’s reacting to the player’s actions within the evocative space. Since it can be seen as more than an evocative space, it might be added to Jenkins’ list of different kinds of environmental narrative categories that can be used to experience an intended narrative.

**Enacting Stories and the experience of freedom within a pre-defined narrative**

Another possibility within ‘open world’ games is to ‘enact’ a narrative in the non-linear environment. Jenkins claims that game spaces enable the player to enact a story that is predefined by an author.\(^\text{80}\) By providing a non-linear experience of the game spaces in ‘open world’ games, the player is provided with a sense of agency to enact a narrative, even though the outcome of this narrative is pre-defined. It works according to the flowchart model: each decision ultimately leads to the same outcome. Therefore, in ‘open world’ games, the player’s approach to pre-defined narratives (in the form of obligatory missions) can be non-linear, as I have illustrated in the assassination mission in *Assassin’s Creed: Unity*: even though the outcome of the sequence in the game is linear (it ends with Sivert being assassinated), the player has quite some environmental freedom in approaching how the imminent assassination is executed within the pre-defined narrative. This also relates to the vector model with expanding sidebranches as discussed in the second chapter; the experience of the story itself is sequential and linear, while the main progression can be paused. This allows side-narratives or extra information to be extracted, which enhances the understanding and experience of the intended narrative.

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Embedded Narratives

Another way in which the environment can be used to communicate a narrative, is through what Jenkins describes as “embedded narratives”. These embedded narratives can be seen as secondary narratives or backstories, which are present alongside the events that unfold in the main (primary) narrative. He writes that they are best illustrated by a detective story. On the one hand there is the primary narrative of the detective encountering clues, and on the other hand there is the secondary narrative of the crime being reconstructed (mentally) by the spectator as they “assemble and make hypotheses about likely narrative developments on the basis of information drawn from the textual cues and clues.”

The environmental non-linearity provided in ‘open world’ games, offers uniquely strong possibilities to embed this second narrative layer in the environment, as they allow players to visit different places in the narrative space, or question different NPC’s in any order the player prefers.

The ‘open world’ detective game “The Vanishing of Ethan Carter” (2014, The Astronauts) provides a good example of how a backstory can be embedded in the environment of the game. The game begins by showing a text message that reads: “This game is a narrative experience that does not hold your hand.” This refers to both the experience of environmental non-linearity, and to the absence of augmented symbols in the game world interface to ‘guide’ the player (in contrast to the ‘game world interface’ used in Assassin’s Creed: Unity).

When entering the game’s virtual environment, the player is given the opportunity to “experience, in non-linear fashion, a story that combines the pleasures of pulp, private eye, and horror fiction.” Through environmental exploration, the player must investigate the area in search of (non-textual) elements to reveal a narrative. The game only offers the illusion of non-mediation to ‘naturally’ interact with the ‘game world’ in order to detect clues. Developers promote the environmental non-linearity as one of the key experiences of the game, as they state on their website: “Conduct the investigation on your own terms and at your own pace.” In this case, the possibility for exploring a non-linear environment offers a

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81 Ibid., 124
82 Ibid., 125
83 Ibid., 125
85 Ibid.
more demanding attention of the player in order to ‘investigate’ the area actively, and players must use embedded elements in the vast environment to understand an intended narrative. Providing a non-linear experience of the narrative space allows the player to freely investigate the narratively rich area and mentally reconstruct the secondary (intended) narrative, creating a uniquely immersive experience.

Figure 16. A unique sense of ‘freedom to investigate’ the diegetic space and uncover an intended narrative without the help of augmented symbols or a geographic map in the ‘game world’ interface.

3.2 The possibilities of environmental non-linearity for experiencing and creating unintended narratives in ‘open world’ games.

Aside from communicating an intended narrative, the non-linear virtual environment in ‘open world’ games also offers the possibility for the player to create or generate unintended narratives. In this case, ‘non-linearity’ not only refers to environmental exploration, but also to the possible amount of interactivity within the environment (allowed by the game engine) in order to create the discussed ‘player narratives’. Some ‘open world’ games go as far as to allow the player to freely construct the narrative space around the ‘player narrative’ as well, and are therefore often described as ‘sandbox’ games: the game engine serves as a sandbox, in a metaphorical sense, which offers material that can be manipulated and used to construct or alter the virtual environment. In this paragraph I will discuss and analyze how ‘open world’ games allow these ‘player narratives’ and world-building possibilities by describing them in terms of Jenkins’ remaining category of environmental storytelling, namely that of ‘emergent narratives’.
Emergent Narratives

Jenkins states that the game space can act as “a kind of authoring environment within which players can define their own goals and write their own stories.”\(^{86}\) From this authoring environment, narratives can emerge. Jenkins primarily discusses the creation and customization of characters in “The Sims” and illustrates that the experienced narratives with the characters can, to a great extent, be authored or created by the player.\(^{87}\) He illustrates that, by creating complex characters that react in unique ways to different circumstances, the experienced narratives are not pre-determined (or intended) by the game developers. Besides character creation, the game space plays an important part in making emergent narratives possible, as it offers a framework within which narratives may emerge. Though the creation of the player’s own character is not unique to ‘open world’ games, the ability to provide a highly interactive non-linear environment does offer unique possibilities for narratives to emerge. I will argue that ‘open world’ games offer two unique ways in which the non-linear environment can be used as an authoring environment for emergent narratives, which might be added to Jenkins’ description of emergent narratives:

- By randomly generated events in the earlier discussed ‘living environment’, using NPC’s and the environment itself.
- By providing tools with which players can construct their own narrative space, game rules and textual narratives.

Because of the increasingly powerful technical systems behind the game engines, many recent ‘open world’ games are able to offer crowded areas filled with NPC’s that interact with the player and the environment. As I have described in the first paragraph, Assassin’s Creed: Unity offers these NPC’s in the form of crowds in different areas of the city, creating the discussed ‘living environment’. Interacting with the crowd or merely passing by may generate a reaction. The game engine even allows for randomly generated events: at any moment, members of the crowd may try to steal something or commit a different crime. This may collide with the player’s main objective or narrative, which then becomes afforded, but, at least partially,

\(^{87}\) Ibid., 128
unintended by the game developers; it is influenced by randomly generated events from the environment. In this way, an at least partially unintended narrative can emerge from non-linear environmental exploration.

![Image](image.png)

**Figure 17.** Random events are generated in the crowd while exploring the environment.

In so-called ‘sandbox games’, players are offered the ability to be the author of the environment, and construct their own narrative. The sandbox game “Minecraft” (2011, Mojang AB) is a prime example of a game that offers this non-linearity in the form of free exploration and the freedom to alter the ontological constitution of the environment. The player is given the authority to decide what exists in the environment, and what does not exist, and is given ‘building’ blocks of different materials to realize his or her authorship.

Each game session in Minecraft positions the player in a randomly generated, non-linear environment with varying landscapes. The player can exploit the virtual environment by exploring and mining for resources. These resources, such as wood or stone, can be used as ‘building blocks’ to construct architecture, infrastructure and more. Within these constructed spaces, there are no set objectives or rules, and players can create their own narratives. As described by game journalist Pete Haas, Minecraft “is all about building.”

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When players have constructed an environment, they can create game rules or a textual narrative within that environment, by using ‘game rule commands’ as an overlay interface to interact with the game engine. The created environments, game rules and textual narratives can be shared online with other players. In this case, the role of the game developers is to provide a highly interactive engine from which narratives can emerge by letting players create them.

Figure 19. Players insert texts and game rules in their own constructed narrative space.
3.3 Possibilities for ‘intertwinement’ of textual and environmental non-linearity and unintended/intended narratives.

In complex ‘open world’ games, the environmental non-linearity is often intertwined with textual non-linearity. This intertwinement, along with the possibility to provide intended narratives and to allow unintended narratives in the environment, form a foundation that further strengthens the experience of the often-mentioned characteristics of ‘interactivity’ or ‘freedom’ when defining ‘open world’ games.

Intertwinement of environmental and textual non-linearity

The complex ‘open world’ in The Witcher 3: The Wild Hunt offers a clear example of how this ‘intertwinement’ of the textual and environmental non-linearity can strengthen the experience of ‘freedom’ and ‘interactivity’ in the game world.

When exploring the vast, medieval environment through immersive navigation, the player may encounter a dwarf in a local village, whose house is burnt down to the ground. Interacting with the dwarf activates a branch of the game’s textual architecture in the form of a sea anemone. The player is asked by the dwarf to find the arsonist who set his house on fire. In this instance, the player is able to choose a route through the textual architecture; the progression model in this case is a tree-model, since different choices open or close different branches. Choosing to help or not to help has implications for the possible progression in the textual architecture and in the non-linear environment.
Figure 20. The player gets to make a choice in the narrative architecture which has direct environmental consequences.

If the player chooses to help, he or she must investigate the area and find the arsonist. As soon as the player finds the perpetrator, he must face a second choice in the non-linear architecture. The arsonist offers a bribe, and explains he is a merchant, who can arrange profitable goods for the player if he or she lets him go. If the player chooses to make a deal with the merchant, another branch in the tree model inside the textual architecture is activated and new narrative missions (involving the player and the merchant) become available in that area. On the other hand, if the player chooses not to accept the bribe, another branch within the textual architecture is activated.
Figure 21. The player must make a second choice in the textual architecture, which activates or deactivates a different branch in the textual architecture of the game.

Upon bringing the arsonist to the dwarf, the village guards are called in, who hang the arsonist on the nearest tree. This causes a direct environmental consequence: the hanged body stays in the environment and confronts the player with his or her choices each time he or she passes by when exploring the environment. As a secondary effect in the textual architecture, the dwarf has more requests for the player (as an accessible branch), and other narrative structures become available, while other branches are closed.

In turn, the exploration of the non-linear environment has the ability to influence the possible routes within the textual architecture. Because the player freely explores the environment, parts of the textual architecture in the form of a sea anemone (with side-branches which enrich the story) may or may not be triggered. In The Witcher 3: The Wild Hunt, the order in which missions (and thus branches of the textual architecture) are activated is important for the possible progression within the main intended narrative. It also makes the game a more individual and free experience: players choose their own route through the environment and the textual architecture, while all choices made by the player influence the progression in both structures.
The combination of intended and unintended narrative
Another combination that may form a foundation for the ‘interactive’ or ‘free’ experience in ‘open world’ games, is their ability to offer players a ‘sandbox’ mode alongside an intended narrative, which, in my opinion, could still be further explored in most ‘open world’ games.

One of the most recent examples of this still rare combination can be found in Grand Theft Auto: V, which presents both an intended narrative in the form of a non-linear textual architecture while also offering players the ability to completely alter the environment in order to create their own narratives or missions.89

In the GTA: Online mode, players can create race tracks, heist missions and other environment-altering structures. In this way, players create their own content in the large, non-linear environment. Through a complex interface in the game, players can create waypoints and mission rules. The game even allows the creation of a primitive textual architecture in the form of programmable characters as actors and the ability to add simple texts.90

Figure 22. The in-game interface to create ‘player narratives’ alongside the intended narrative.

89 Aside from the unintended narratives, GTA V uses the track switching system as explained by Ryan to provide the player with three playable characters in the game. At several points these three characters meet and experience parts of the narrative together in different intended missions.
In the case of *Grand Theft Auto: V*, there is a strict separation between the unintended ‘player narratives’ and the intended textual architecture of the game. The only real shared component is the non-linear narrative space for experiencing intended and unintended narratives.

However, for the experience of the game on the whole, it does strengthen the experience of ‘non-linearity’, since the game offers a lot more freedom than only exploring the non-linear environment alongside an intended narrative. Instead, it also allows players to extend and further construct narratives within that environment, which forms an important basis for the experience of ‘freedom’ in the game, and shows the high level of possible interactivity within its game engine.

The next possible step in creating even more complex ‘open world’ games, might be to create a true intertwinement of intended and unintended narratives. This could allow the player to build or construct ‘player narratives’ alongside a textual architecture, and both structures can then influence each other: the intended narrative reacts to the player’s created narrative space, and the player is influenced by the textual architecture or overall intended narrative.
Conclusion:
In this thesis, attempted to answer the main research question:

- Which narrative possibilities does the experience of environmental non-linearity in open world games provide?

As a subquestion, I aimed to answer the question of how this overview of environmental narrative possibilities explains the often-mentioned experience of ‘freedom’ and ‘interactivity’ when playing ‘open world’ games.

First, it was important to clarify the possibility ‘open world’ games have of using environmental non-linearity as a narrative space, in order to provide these unique narrative possibilities.

In (‘open world’) video games, the narrative space is constituted by the virtual environment. In order to clarify this notion of ‘virtual environment’, I have given a brief sketch of the historical context of the development of this environment in video games in the first paragraph. This showed how the technological development of the game engine has made it possible for players to freely explore a large, three-dimensional virtual environment: an ‘open world’. This development offers players some agency in their movement, and thus the ability to wander off the intended path; the virtual environment in open world games is a non-linear environment. I have argued that it is precisely this non-linear environment, which allows the player to have a sense of agency within the virtual environment, thus providing open world games with unique narrative possibilities.

In the second paragraph, I argued that the existing journalistic definition of ‘open world’ games is not suited to properly assess these unique narrative possibilities. I have listed the often-mentioned characteristics, and concluded that most notably the characteristics of ‘freedom’ and ‘interactivity’ allow unique narrative possibilities for ‘open world’ games, although they are still in need of clarification and scholarly reflection.
In the third paragraph, I used Jenkins’ notion of ‘environmental storytelling’ to show that part of this clarification consists of determining how a virtual environment can be used to communicate a narrative. I have argued that a virtual environment can create the pre-conditions for an immersive narrative, which gives rise to ‘evocative spaces’. Since ‘open world’ games intensively use their environment, I have concluded that they have uniquely strong potential for ‘environmental storytelling’.

Since open world games use environmental storytelling in a non-linear environment, and this non-linearity provides the ‘freedom’ discussed earlier, I argued that Kwastek’s proposed method for analyzing interactive artworks best suited my research. Therefore, I have focused on the technical systems behind the game, the intentions of the game developers and, most importantly: the subjective experience of the game.

Having clarified the notion of ‘environmental non-linearity in open world games’ I have used to assess its narrative possibilities, it was also necessary to provide a working definition of the term ‘narrative’. For my working definition of a narrative, I have turned to Ryan’s transmedial definition in the form of a proposed toolkit, consisting of narrative ‘ingredients’ from which a possible definition can be formed, allowing non-linear and interactive narratives. I have also applied Ryan’s distinction between ‘a narrative’ as being intended and ‘narrativity’ as being unintended, to my own field of studies. I regarded ‘intended narratives’ as communicated directly by the game developers, and ‘unintended narratives’ as created or generated through player interaction.

In the third chapter, I answered both questions by applying and expanding several authors’ more general insights into environmental storytelling specifically to ‘open world’ games, on the basis of close analysis of several examples. Although the resulting list of narrative possibilities is by no means final, it should provide a good starting point for scientifically analyzing the unique narrative potential of ‘open world’ games.

First, I used Mamber’s notion of ‘narrative mapping’ to show that open world games have a unique ability to provide the player with a geographic map, as part of the interface. Using Kristine Jorgensen’s coined term ‘game world interface’, I have described how ‘open world’ games can provide tools with which to comprehend an intended narrative:

- Through the use of augmented symbols in the environment
By the illusion of non-mediation when interacting with the environment

By providing additional information in the form of visual overlays

Furthermore, I have argued that ‘open world’ games have the unique ability to ‘train’ the player to get to know the narrative environment by heart, and thus are able to use the environment itself as an interface to acquire information about the intended narrative.

I have also argued, through the use of Ryan’s insight into understanding an intended narrative by creating a geographic narrative map, that open world games have a unique ability to provide an objective narrative map, as a tool which enables players to keep track of and understand an intended narrative in the vast, non-linear environment. Furthermore, I have explained how different points of interest on the provided map may also serve as a tool to better understand an on-going narrative. I have also concluded that, by being able to freely roam the virtual environment without having to progress in the textual architecture, the player is invited to inspect these points of interest, and to further investigate the narrative space. This, too, may help to comprehend an intended narrative.

I have also discussed the possibility for ‘environmental storytelling’ to help communicate an intended narrative in ‘open world’ games. Using Jenkins’ five proposed categories of environmental storytelling, I have expanded and related them to the way in which ‘open world’ games are able to use these different categories:

- Evocative spaces: I have concluded that ‘open world’ games, besides being able to create uniquely strong evocative spaces because of their intensive use of the environment, can go further and even create what I call ‘living environments’. These living environments consist of a combination of the use of computer-controlled characters that are programmed to have their own routines and reactions to the player’s actions, and the richly filled fictional environment.

- Enacting stories: I have concluded that, even though the player must complete linear missions in the textual architecture of a narrative, he or she still has the freedom to enact the textual architecture in a non-linear fashion, namely through environmental non-linearity. This can still create a feeling of freedom within a linear textual architecture.
Embedded narratives: Because ‘open world’ games have the uniquely strong ability to embed narrative elements in their environment, it offers strong immersive possibilities for experiencing detective narratives, as the player can use the non-linear environment to conduct his or her own investigation to uncover the embedded narrative.

Emergent narratives: I have concluded that ‘open world’ games offer two unique ways in which the non-linear environment can be used as an authoring environment for emergent narratives, which may be added to Jenkins’ description. The first is by randomly generated events through interaction between the player and the computer-controlled characters in ‘living environments’, and secondly by providing tools with which players can construct their own narrative space, games rules and textual narratives.

In the final paragraph I have discussed the intertwinement of textual and environmental non-linearity in complex ‘open world’ games. I have discussed how this intertwinement, together with the possibility to provide intended and allow unintended narratives in the same narrative environment, forms the foundation that further strengthens and explains the often-mentioned experiential characteristics of ‘freedom’ and ‘interactivity’ in ‘open world’ games.
Bibliography


