Using Architecture to Shape Narrative in Virtual Environments

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Declaration

AB 420 Dissertation 2014/15

BSc Honours Architectural Studies

University of Strathclyde

Supervisor: Mike Grant

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I accept that if having signed this Declaration my work should be found at Examination to show evidence of academic dishonesty the work will fail and I will be liable to face the University Senate Discipline Committee."

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ABSTRACT

This dissertation is a study of how architecture can to be used to shape an evocative narrative within a digital space through the medium of videogames.

This begins with a brief presentation of video games as an emerging modern art form where the relationship between narrative and videogames will be explored, showing that architecture affects the narrative in a number of ways.

An investigation of what role architecture takes in shaping narrative in digital spaces follows through a series of case studies which explore how architecture can be used in video games to create an artistic narrative in a virtual space, namely in setting the scene, controlling player behaviour, evoking emotion and creating opportunities for emergent narratives.

INTRODUCTION

Coming from very primitive beginnings, game design is now one of the largest creative industries, rivalling that of the motion picture business, employing scriptwriters, historic or scientific consultants, sound designers, costume designers and even architects.

This raises the question why should architects be interested in videogames at all? It could be because architecture is a multidisciplinary field which requires those who practice it to engage in art and creativity in a number of forms. Thus if architecture is connected to creative expression in the forms of art, sculpture, music, literature and film we must also consider emerging forms of art such as videogames.
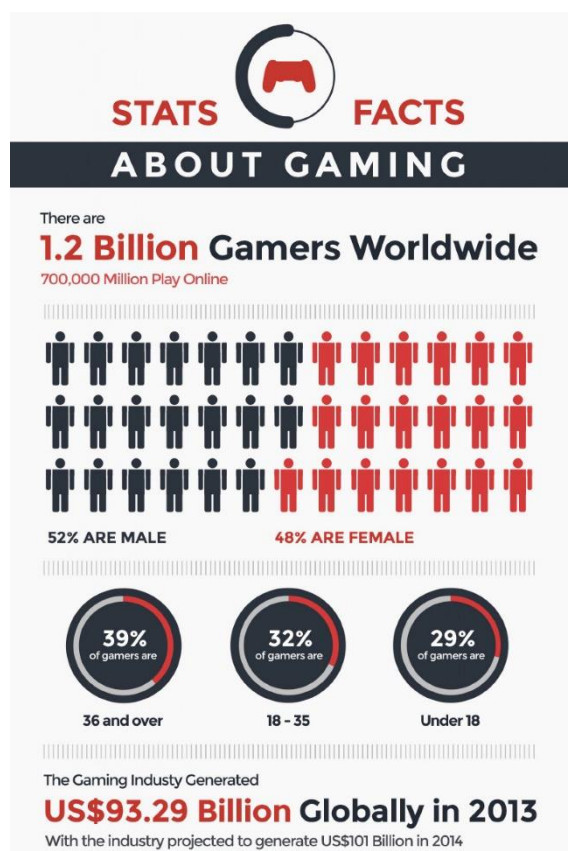

Figure 1: 2013 global gaming statistics (Games Market Dynamics, 2013, *The global gaming industry)*

Despite often being misconstrued as frivolous and trivial, as *Figure* 1 shows, video games have become increasingly mainstream and experiences with video games are shifting from mere shallow entertainment to a more artistic form, opportunities arise to enhance the user experience through architectural expression within these virtual worlds.

This dissertation will present videogames as a valid form of art by examining how artists have made use of emerging mediums in the past to produce artistic works, and apply this

to videogames as a new medium for art. It will then investigate how narrative occurs within videogames, exploring areas where architecture and videogames can interact.

The dissertation will then examine the role of architecture in constructing a narrative in a virtual world and how architecture can be applied to a narrative within these virtual spaces, through a series of case studies of videogames from a variety of genres.

AN EMERGING ARTFORM

Whilst thousands of years lie between the first scrawls on cavern walls and the latest showing of the Cirque Du Soleil, there has been no definitive definition of what art is. The esteemed Russian author and philosopher Leo Tolstoy attempted to describe it thus:

"To evoke in oneself a feeling one has experienced, and…then, by means of movements, lines, colors, sounds or forms expressed in words, so to transmit that feeling—this is the activity of art."
(Leo Tolstoy, 1890)

The question is as old as human history itself and whilst we may still struggle to define what it is that we appreciate about art and to agree on what specific forms of presentation should be considered as art, we recognise art's value in many forms from painting to poetry, sculpture and screenplays, and we appear to assign value to art in relation to the emotional response it can evoke in us.

In *The Greatest Art Form: Video Games and the Evolution of Artistic Expression* (Brett Mullaney, 2013) it is observed that the creation of art over the last century is unique in that new forms of art have emerged in a very short period of time due to the rapid advancement of technology. The first of these new art forms is film.

Much as literature was transformed by the printing press, and music by the record, film has been transformed by various technological advancements; motion photography, Sound recording, colour, computer generated imagery have all worked together to expand cinematography from a simple form of entertainment to a large creative process producing artistically meaningful films. Lewis Jacobs (1969), in his book, *the emergence of film art*, notes:

"[they] were distinguished by a bold and imaginative grasp of camera usage for psychological, dramatic, and poetic effects, and by structural innovations in editing that generated powerful forces in their impact upon audiences."
(Lewis Jacobs, 1969)

Yet at the time many were sceptical of films as an avenue for artistic expression, regarding them as little more than base entertainment akin to burlesque shows or comedy skits of the current stage shows. Critics were particularly wary of the enhancements of new technology could offer in terms of artistic expression. Jacobs (1969) in *the emergence of film art* notes that "talkies", new films exploring the use of sound such as *The Jazz Singer* in 1927 were judged by the standards of silent films with no thought towards how the use of sound fundamentally changed the medium. Despite this with the advent of each new technology films became more diverse in their artistic expression and more widespread in their consumption by society.

"If one general statement can be made about the art of our times, it is that one by one the old criteria of what a work of art ought to be have been discarded in favour of a dynamic approach in which everything is possible"
(Peter Selz, art historian 1919)

Peter Selz (1919) argues that the defining feature of art is a constant state of transformation which continually re-examines what art is and what form it should take. It was new technologies which led to a second new form of artistic expression. The second of these art forms is a range of interactive digital experiences commonly known as videogames. Just as the film industry was revolutionized by technologies the advent of operating systems such as Microsoft Windows and mice and keyboards as input devices has dramatically sped the development and capabilities of videogames. Faster graphics processors and controller innovations led to more immersive experiences; networking to online social environment and offline subculture; iteration and investment in the design process to more complex characters, thematic impact and narrative.

Whilst Jacobs (1969) writes about how film became a staple form of art in modern society, his thoughts on the emergence of art in the film industry perfectly reflect the evolution of videogames as an artistic medium as it stands today: an industry still in its infancy, subject to rapid technological advancements, yet highly criticized as a form worthy of artistic expression in its own right. Popular film critic Roger Ebert (2010) famously claims:

"Video Games can never be art. With artistic creations like a story, a novel, a play, dance, [or] a film, you cannot win; you can only experience them".
(Robert Ebert, Film critic, 2010)

His claim is based on the interactive nature of videogames with which come *"rules, points, objectives, and an outcome."* However many forms of art today have these things and conversely many videogames such as *Proteus* (Ed Key, 2013) have no objectives, no order, no outcomes and exist simply to be experienced by the player who is free to wander and

interact as they chose within the game's simple virtual landscape and draw their own conclusions as to the purpose of the game. The simple polygonal landscapes and vistas have a subtle beauty to them, and wandering the landscape can be a therapeutic experience, as seen in *Figure 2.1*.

Figure 2.1: Players begin at random on an island beach and explore a simple landscape in Proteus.
KEY, E. (2013). *Proteus*, video game: PC, Playstation 3, Playstation Vita, Self Published.

Similarly games can be designed where the objective is simply to appreciate aesthetic beauty. *Firewatch* (Campo Santo, 2013) is a virtual experience inspired by a painting by Olly Moss, one of the design team. In the screenshot shown in *Figure* 2.2 a distinct art style has been used- bold colours set in defined layers create a sense of depth and distance. The ominous orange and red tones convey the game's sense of mystery. Shapes like trees and mountains are flat, and their silhouettes strong, stylized and simplified to fit the overall artistic vision to make the player feel as though they are immersed in a painting.

Figure 2.2: Firewatch puts the player in a virtual world that when taken as a still image appears like a painting.
SANTA CAMPO (2013). *Firewatch*, video game: PC, self published

"Art provokes us to reflect, to ponder, to feel, to engage in ideas, to challenge or invoke our strongly held beliefs and biases. Never in the history of artistic expression has a medium ever asked us to choose, to explore, to make determinations, to take decisive action, and to follow our choices to their conclusions. As noted by so many literary, cinematic, and artistic critics over the centuries, in our relationship with art, we have always been spectators, viewers, readers, and listeners... For the first time in human history, because of video games, we are world explorers and decision makers, individuals acting on, with, and against the art itself. We now can engage the art directly as embedded components. The outcome of entire stories, characters' lives, conflicts, relationships, and resolutions are no longer forced to be predetermined, but rather can be reliant and variant on our decisions and actions that we take within the art itself. And through each decision, and their corresponding outcomes, we are forced to reflect, not only on the art itself, but ourselves."

(Brett Mulleny, 2013)

Only recently with the spread of the technology and the rise of processing power have digital games become a platform capable of sustaining artistic merit. They are now so diverse that even the word 'videogame' becomes diluted and misleading. The broad scope of videogames has evolved beyond the recreational experiences of early *Pong* and *Space Invaders* and spread to tablets, mobile phones and homes as a host of apps, social experiences, interactive narrative and virtual reality environments. These digital experiences permeate our everyday lives and can influence social behaviours, create

online communities, enhance learning or simply tell a story within some form of virtual space. The objective of many videogames is no longer attainment of points to win, or a finishing line to cross. Often the purpose of a videogame is simply to immerse the player in an experience, to promote a set of ideals, or portray a message or story.

"Players don't play to complete games, just as readers don't read to finish books. Players play to feel emotions. Game design is experience crafting for the purpose of emotion engineering."

(Stephane Bura, lead designer at 10tacle studios, 2014).

Just as the outputs of the film industry vary wildly between Steven Spielberg's, *Shindler's List* (Steven Spielberg, 1993) and the dubious artistic merits of the latest *Fast and Furious* instalment, the video game industry is capable of a huge diversity of productions. Pure entertainment products with no artistic aspirations such as the massively popular *Call of Duty* series (Infinity ward, 2009) are just as common as intriguing indie experiences such as *Journey* (Thatgamecompany, 2012) in which players must travel towards a distant mountain by cooperating with strangers using music as a means of communication *(Figure 2.3)*. Similarly the videogame industry is capable of producing complex interactive narratives like *The Last of Us* (Naughty Dog, 2013), critically acclaimed for its characterization, voice acting, music and art direction, and whose narrative was praised for its exploration of the human condition via the relationship between a bereaved father and a young girl in a post-apocalyptic united states.

Figure 2.3: Journey's short emotional experience deals with loss, loneliness, hope and rebirth.
THATGAMECOMPANY (2012). *Journey*, video game: Playstation 3, Playstation 4, Sony Computer Entertainment

At their highest levels videogames can be an interactive form of art, a collection of choices in sound, visual imagery, story and character in which the user participates and shapes around their own choices. Art in any form asks us to reflect, to wonder, to feel and to question our beliefs and misconceptions. Recent years have seen the emergence of a new form of artistic expression with the advancement of videogames which allows us to directly interact and intervene with an artistic vision, to engage with the art and make changes in real time to the outcome of that artistic idea, enabling a new audience as artists within their own right. Whilst society has become comfortable in an increasingly virtual world, artists have only just begun to grasp the limitations and possibilities offered by this new digital medium, which shows its main artistic opportunity in the ability to immerse the player in a story, to let the experience and influence a narrative.

WHAT IS NARRATIVE IN A DIGITAL REALM?

Game designers and artists have being creating narrative spaces for years in role playing board games such as Dungeons and Dragons, a form of text based role playing. When games such as these made the transition to the digital realm, resulting games such as *Zork*, (Infocom, 1977) focussed created a narrative based on still images, or even simple text revealed to the player as he traversed along a linear route.

"The main thing that led me to being creative in general has always been the desire to tell great stories. Whatever form the setting or story may take, what matters to me most is the emotion at its core. If we can create and convey that level of emotion with a medium like videogames. With my own games I envision transporting players and giving them a sort of virtual trip… This reinvention of the world is one I prefer to deal with, and the best way for me to tackle various social topics."
(Benoit Sokal,co-creator of *Myst* adventure game)

Early side-scrolling games such as *Sonic* (Sega, 1991) advanced this concept and began to merge the rich narrative of between text based adventures into more robust virtual worlds and though the narrative was established through a simple objective, the games allowed for a surprisingly diverse range of environments through which the player traverses, allowing the player to imagine their own narrative as he or she progresses, their progress measured by the backdrop of the level, as shown in *figure 3.1* and the narrative imagined in the players head based upon hints from the surroundings, the pace and tone of the music and the ramping difficulty of the levels drawing towards a climactic confrontation and conclusion. These kind of experiences can be compared to ancient methods of storytelling such as Egyptians paintings which show the seasons of fieldwork.

Figure 3.1: Stages of Sonic as compared to Ancient Egyptian Paintings
SEGA (1991). *Sonic*, video game: Sega Genesis, Sega

These scrolling artworks also attempt to chart a simple narrative, the simple beauty of a harvest cycle or the horror of an ancient battle. In the case of *Sonic* (Sega, 1991) the narrative may be in an abstract, experimental form, more comparable to music or modern dance than to film in the way that a performance such as *the Nutcracker* ballets tells a loose story, without it being the focus of the performance.

Some of the most memorable artistic designs in both architecture and videogames can be traced back to a conscious choice to focus on the narrative. In 1987 a struggling Japanese game studio known at the time as Square pinned all their hopes on one last game. The lead designer took on a unique story based approach to designing the game.

"I don't think I have what it takes to make a good action game. I think I'm better at telling a story."
(Hironobu Sakaguchi, 1987)

Square's final game, a fantasy based role playing game became known as the aptly named Final Fantasy, one of the world's most successful gaming series, inspiring thirteen more official games as well of dozens of spin-offs, films, television shows and merchandise, catapulting the company, now Square Enix, from bankruptcy to critical success.

Similarly, Frank Lloyd Wright, when asked to build a new home for a successful businessman and his family in Pennsylvania, was told of how the family would visit the waterfall, bathe on the rocks and bask in the sun during the day. Rather than design the house with a view to the waterfall as was expected Wright built one of his most famous works known as "FallingWater" over the falls, with the sun heated rocks forming the central hearth of the house, in response to the family's story.

Figure 3.2: Designs based on narrative beginnings

FRANK LLOYD WRIGHT (1935) Falling Water

SQUARE ENIX (1987) Final Fantasy, video game: Nes, Square.

The comparison of Fallingwater and *Final Fantasy* (Square Enix, 1987) in *Figure 3.2*, on the surface two wildly different ideas, demonstrates some of the ideas of narrative spaces as described by MIT Media professor Henry Jenkins, (2005). In his online blog *Game Design as Narrative Architecture*, Jenkins describes narrative space as any space that *"shapes a narrative frame and experience."* According to Jenkins narrative spaces can be described in a number of ways: Evocative, Embedded, Staging and Emergent.

Totten (2008) would describes Fallingwater as an Evocative Narrative Space in that the way the space was designed and the materials used translates to a narrative. The narrative in this case was the family's visit to the site which are reflected through the use of stone and placement of the house around the heated rocks. Many fantasy or sci-fi role playing games such as *Dragon Age* (Bioware, 2009) or *World of Warcraft* (Blizzard Entertainment, 2004) could be described as evocative via the manner in which the fantasy setting of the game brings preconceived and identifiable basis for the narrative.

Embedded Narrative Spaces are best described as spaces where narrative points are designed into the actual space. For example Gothic churches used embedded narrative in their detailed facades depicting events from the Bible, or stories told within stained glass windows. Similarly in video games the state of a games world can inform the user of the basis for a narrative, for instance Black Mesa Research Facility in which the game *Half-Life* (Valve Corporation, 1998) takes place, is marked by the results of the incident that opens the game, informing the user of an accident which informs the resulting narrative of the game.

Staging Narrative Spaces in the context of a film could be described as movie sets where the audience is shown story elements from a fixed vantage point. In terms of videogames, this could be said to be moments where players are withdraw from the games action to witness character interaction or plot points unfold. Eric Strand (2008), animator for *Half Life 2* (Valve Corporation, 2004) describes how Valve went about designing story elements for the game. During a scene where a character, "Magnusson", is used to explain how to operate a device Valve noticed that during playtesting players would often run

past Magnusson on their way to the next scene out of impatience. By changing the room to resemble a more auditorium like space, with Magnusson at the head of the room as though he were lecturing to the player they were more likely to slow down in the room and listen to the character. This minor change altered the player's behaviour while reinforcing Magnusson's character who was to be pompous and arrogant and frequently lecturing other characters and shows an example of Staging Narrative in videogames.

Lastly, Emergent Narrative Spaces provide opportunities for the player to interact with the narrative and create events resulting from the actions of those involved, as though the narrative were being created in real-time.

It can be said that architecture can be used in many ways within video games. Often it is used representationally; it can be entirely fictional, representing neon sci-fi suburbs or crumbling fantasy castles; it can even be created entirely by the user to fit gameplay or preferences. How then can we use architecture to create the types of narrative spaces described by Jenkins? Through a series of Case Studies this dissertation will examine the role of architecture in building narrative in the virtual realm.

HOW IS NARRATIVE FORMED THROUGH VIRTUAL ARCHITECTURE?

Assassin's Creed: A Historical Playground

The most obvious use of architecture within games is to place the player within a given context by using or mimicking architectural styles local to a specific country or time period. One only has to glimpse the architecture of a place to be instantly transported there in a virtual environment. The *Assassins Creed* series (Ubisoft, 2007) is one such game that uses architecture as a tool to place the player in a chosen setting. The games features gameplay which takes place in various cities in historical contexts. The developer's apt motto "history is our playground", and their games at their most basic function can become virtual tours of the people and architecture of places and time periods including Jerusalem during the Third Crusade, 16th century Rome, French Revolution Paris and American Revolution United States. These environments are painstakingly detailed in order to transport the player through time and place them in a unique historical context in a time of turmoil.

Figure 4.1: Architecture, Character design and Sound design work together to create a narrative of Paris during the French Revolution in 1776 as seen in Assassin's Creed Unity.
UBISOFT MONTREAL (2014) Assassins Creed- Unity, video game: PC, Xbox one, Playstation 4, Ubisoft.

The architecture works in conjunction with fashion, music, styles of that time period to create a sense of place.

"...Gamers control protagonist Ezio Auditore da Firenze as he nimbly scales Italy's architectural landscape and stalks foes from the rooftops... Of course it's a virtual construction, but nothing else can give you the beauty of that kind of breath-taking perspective while walking on the rooftops. History is unparalleled compared to human imagination. No one imagined the [Roman Catholic] pope would send assassins to kill his enemies in a church, but it happened."

(Marcello Simonetta, historical consultant for *Assassins Creed 2*, 2010)

The effect of directly recreating a style of architecture has the effect of the user immediately associating the narrative with a setting which matches the architectural style shown in their mind. *Figure 4.1* Shows a typical scene from *Assassins Creed: Unity* (Ubisoft Montreal, 2014), where architecture, character design and sound design work together to create a narrative of Paris during the French Revolution in 1776.

In addition the gameplay of Assassins Creed allows the player, as a nimble assassin, to climb up and over buildings and rooftops as a means of traversal. In this way the architecture of the city becomes an important gameplay element. By controlling the relationship of open public squares and dense populated areas the game designer can control the player's behaviour by providing safety in the height of rooftops to stalk a target or circumnavigate threats, or a sense of vulnerability in the lack of cover and escape routes of open spaces.

In this way the direction and pace the player follows in this open world can be influenced by simple architectural designs such as building heights and placement to match the path and pacing desired for a strong narrative. The game can then populate the most likely player path with points of interest, or narrative exposition to expand or progress plot points during gameplay which would otherwise be devoid of depth (*Figure 4.2*).
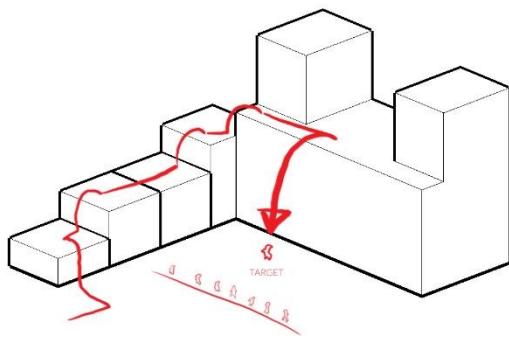

Figure 4.2: Controlling player behaviour through providing opportunity and danger.

Mirror's Edge: Modernistic Masterpiece

Similar parkour gameplay mechanics are found in *Mirrors Edge* (EA, 2008), however the premise and use of architecture as a tool for evocative narrative is drastically different. Whereas *Assassin's Creed* uses architecture as a tool to set the scene for a narrative portraying historically accurate time settings and events, *Mirror's Edge* portrays a fictional modern city where the population, while healthy and content, is strictly monitored and controlled. The player's character, "Faith", rebels against government control by illegally smuggling prohibited luxuries across the city. She uses parkour to traverse the city via rooftops, back alleys and underground tunnels, eschewing traditional methods of transportation in favour of freedom of movement.

The use of architecture in *Mirrors Edge* is successful in that it promotes an aesthetic style which furthers the narrative and theme whilst influencing gameplay mechanics. The city is bleached of colour, save for a few strategic colours which are restricted to interactive elements. Red highlighting platforms, stairs, walls which the player can use for traversal, while blues and greens highlight horizontals and verticals to discern important boundaries and edges in a jungle of bright whites and greys. Straight lines and simple repeating geometry combined with strategic use of colour make it easy to discern routes for the player.

The result is a rather corporate environment bereft of colour; efficient, sterile and clean. In short an almost perfect expression of Modernist theories. Some would be tempted to

criticize the sterility of this aesthetic however beyond the practical effect of bleaching unimportant elements and highlighting waypoints and paths for players, the city is a reflection of the games main narrative themes. The use of Modernism serves as a vision of the uniformity and banality of the established society and by mimicking the modernist style in a modern environment the game's setting adopts the properties of Modernism and evokes associations with the tenets of this style of architecture. *Figure 5.1* shows how *Mirror's Edge's* main themes of freedom and rebellion against the establishment are conveyed through the protagonist's creative, meandering mode of traversal and splashes of colour juxtaposed against a backdrop of efficient straight lines and fields of white urban Modernity. The architecture of the city supplements the narrative theme while also highlighting the optimum route for the player to travel, thereby providing a practical gameplay function.

Figure 5.1: Colour & diagonals in a bleached Modernist environment highlight gameplay routes while also complimenting anti-establishment themes.
EA DIGITAL ILLUSIONS (2008). *Mirrors Edge*, video game: PC, Xbox 360, Playstation 3, Electronic Arts Inc.

Although many modern games take place in present day cities and environments, architecture within virtual environments will often be theoretical due to the ethereal nature of the virtual world. This opens avenues of opportunity in that anything is technically possible in a virtual environment. Architects can entertain ideas of alternative realities, simulated physics and subjective or spiritual experiences, draw upon imagined cultures or geoscapes to influence the direction of the architecture within the game.

As users travel though an entirely fictional landscape, the journey becomes the narrative experience and so architecture can be used to craft this journey through a digital space.

Whereas previously a video game might only portray a limited two dimensional view of the world, more modern titles are prompted to portray entire cities, countries and large open spaces through which the user can travel freely at will, unconstrained by boundaries or invisible walls. How then can the architect influence this journey and guide the user along narrative paths and create states of emotion along the way?

Bioshock: A Critique of Objectivism

In 2007 Developer 2K Boston's *Bioshock* raised the bar with deeply immersive embedded narrative and architectural merit in a game which drove traditional gameplay elements towards a higher level of maturity. The game is set in "Rapture", an Art Deco masterpiece inspired by Ayn Rand's theory of Objectivism and built by fictional business extraordinaire Andrew Ryan (a partial anagram of the former). This self-sustaining utopian metropolis, made up of Art Deco buildings connected by a network of glass tunnels and traversed via Bathyspheres, was built entirely underwater at the bottom of the ocean as a secret haven for the elite only to meet a cataclysmic end as endemic corruption exploded into civil unrest.

Figure 6.1: Rapture, a city built completely underwater as a refuge for the elite, falls into disrepair and collapses into anarchy prior to the events of the game.
2K BOSTON (2007). *Bioshock*, video game: PC, Xbox 360, Playstation 3, 2K Games.

The fate of Rapture is revealed as the player explores its sundered submerged halls, its fall brought about by the very extravagance which created it. Man presumed to beat nature and to transcend god by creating this underworld city fuelled by geothermal and volcanic power from the ocean's floor and populated by an elitist population hooked on addictive genetically altering Plasmids which grant godlike powers and whose chief motivation was pride and self-interest.
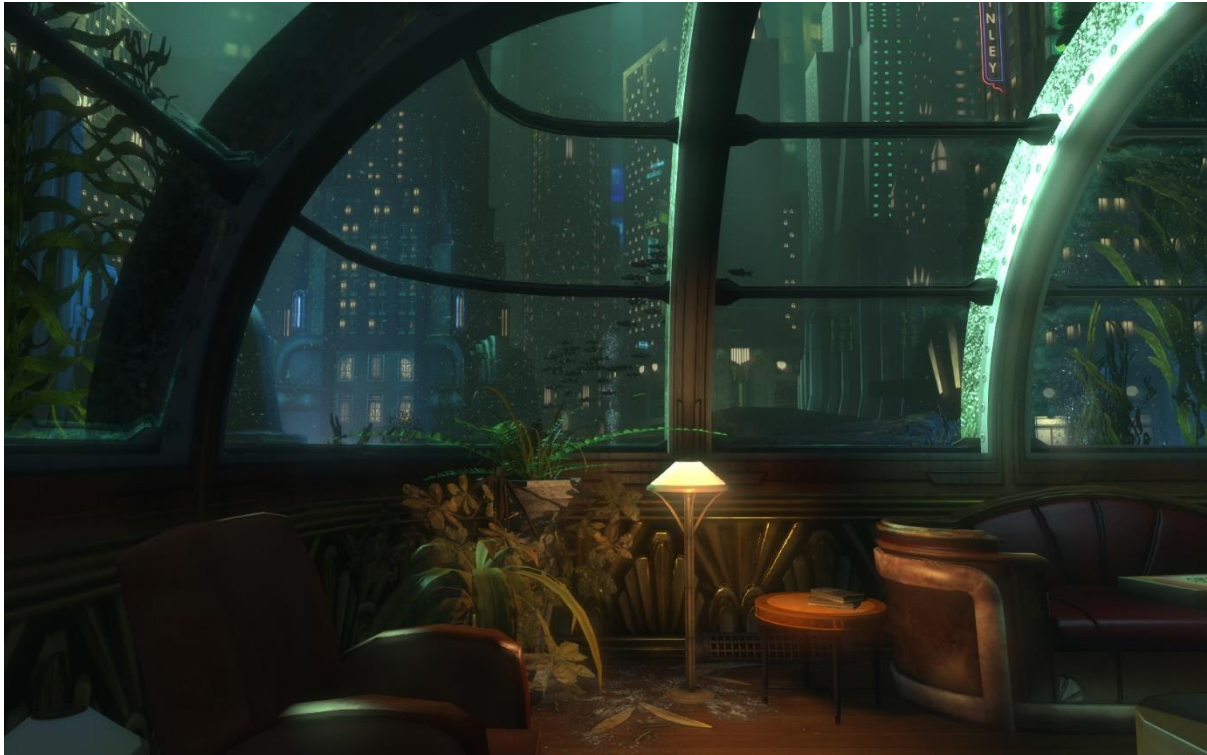
Figure 6.2: The city of Rapture and its architecture becomes the focus of the narrative.
2K BOSTON (2007). *Bioshock,* video game: PC, Xbox 360, Playstation 3, 2K Games.

It is this intriguing megastructure which becomes the central focus. Rapture, lying submerged on the ocean floor and home to the scientific, cultural and business elite, becomes the embodiment of the narrative themes and more important than even the characters or the action.

"To build a city at the bottom of the sea! Insanity. But where else could we be free from the clutching hand of the Parasites? Where else could we build an economy that they would not try to control, a society that they would not try to destroy? It was not impossible to build Rapture at the bottom of the sea. It was impossible to build it anywhere else."
(Andrew Ryan, Antagonist in Bioshock)

Bioshock (2K Boston, 2007) succeeds at being a mature critique of a philosophical social structure because it deals with the main tenets of Objectivism not through long discourse, or character conflicts as seen in traditional media, but through immersing the player in an environment where Ayn Rand's ideals are experienced through the architecture of Rapture. Through architecture the game becomes an analysis of what a society might become if its people were motivated only by their own desires and not limited or hindered by any external factors.

"...by filling a city with ambitious experts, trained geniuses, and breakthrough artists, Ryan set up a top-heavy class system with most Rapture citizens feeling that essential jobs such as food processing, cleaning, simple maintenance, etc. were beneath them, and thus were often ignored...this led an eventual economic collapse throughout Rapture...Furthermore, in order to keep Rapture safely hidden from the parasites, Ryan strictly forbade contact with the surface, inadvertently creating a market for smuggled goods, which in turn led to... criminal enterprises. At Rapture's outset, Ryan intended this law to be Rapture's only one, but in the end, it proved to lay the groundwork for Rapture's decline and then divisive civil war."

(Ubik, BioShock's critique of Ayn Rand & Objectivism, 2011)

The choice to submerge the entire city can be seen as a direct response to Objectivism's tenets. Objectivism holds that one should follow their own self-interest and profit from their own abilities and ambitions while being virtually uninhibited by others and so in order to isolate itself from the rest of the world Rapture is built underwater. The cost of this pride and arrogance can be seen in the towering spires crumbling into the ravine and in the grand halls adorned with extravagant gold leaf flaking as water seeps in from tired joints *(Figure 6.3)*. The architectural choices made in *Bioshock* (2K Boston, 2007) inform the player and drive the player to explore the flooded halls and Rapture and discover the narrative of the game.

Figure 6.3: Crumbling opulence in the Art Deco architecture forms a narrative of corrupted Objectivism.
2K BOSTON (2007). *Bioshock,* video game: PC, Xbox 360, Playstation 3, 2K Games.

Rapture itself becomes the biggest contradiction to Ayn Rand's Objectivist ideals. Andrew Ryan constructs this illogical metropolis and by encouraging the occupants to

concern themselves only with their own interests and deny the natural desire to empathize with and cooperate with other human beings he sets in motion the events for Rapture's eventual demise.

Through the videogame the player is immersed in this sinking city and eventually comes to see the truth of this in Rapture's architecture as the environment is revealed, and falls to ruin, around them.

Half Life 2: A Tale of Two Cities

Half Life 2 (Valve Corporation, 2004), takes place in City 17 in the wake of an alien invasion and occupation of Earth in which the player is thrust into the role of a man who becomes a symbol for the resistance movement. The covenant of invading aliens, known only as "The Combine" move from planet to planet with the aim of assimilating new races under its control, and rather than destroy and rebuild prefer to use an existing infrastructure and bend it to its own uses.

The game's entire aesthetic approach, designed by visual artist Viktor Antonov, works with the lore of the narrative to create an immersive environment in which human culture clashes with attempts by the Combine to domesticate the city, hindered by the resistance movement.

Figure 7.1: architecture of the Combine clashes with classical eastern European Style of City 17 and acts as a metaphor for the conflict.
VALVE CORPORATION (2004). Half Life 2, video game: PC, Xbox, Xbox 360, Playstation 3, Valve Corporation

When attempting to assimilate City 17, after a brief war The Combine dropped a command tower from orbit known as "The Citadel" *(figure 7.1)*. This panopticon becomes a symbol of oppression throughout the game and serves several other purposes from an architectural point of view. Besides from the oppressive impact the Citadel has from its sheer scale as it lances into the sky far above the clouds, it is visible from almost any distance and not obscured from vision even by surrounding apartments or tower blocks. As the player makes his quest to the centre of the Citadel to attempt to overthrow the Combine the deliberate choice of scale means that the Citadel is almost always visible to the player, a constant reminder of the player's objective and a symbol of oppression to be resisted.

Valve have used traditional architectural techniques to dramatize the journey to the tower through the city. Their methodology mirrors that used in the approach to Parthenon in Athens, where the visitor is steered towards key points on a journey. As seen in *Figure 7.2* the visitor climbs the steps of the Acropolis to see the Parthenon from afar and below. The next reveal is through the portal of the Propylaea, then they are forced to take a meandering route around the building before being allowed to enter. This theatrical approach inspires a more intriguing narrative and a higher sense of impact on arrival.
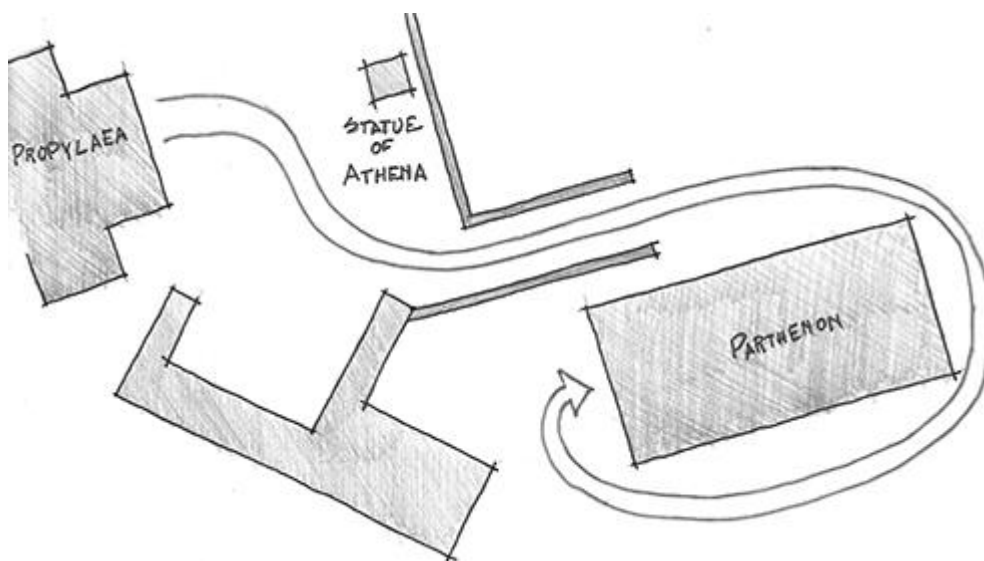

Figure 7.2: A controlled theatrical approach to Parthenon mirrors the journey to the citadel in Half Life 2
TOTTEN, C. (2014). An Architectural Approach to Level Design. London: CRC Press

Half Life 2 (Valve Corporation, 2004) takes place entirely within City 17 and consists of around 8 hours of gameplay to complete, taking the player through a variety of environments from shanty-town suburbs to sewers to rooftops in a constant quest towards the Citadel, with the narrative being created in a series of spaces leading to the climactic confrontation atop the tower. The drama required for this climax to the citadel

is built using a processional approach through a variety of spaces, by revealing and hiding the citadel at points in the narrative to control the pace and emotional journey of the narrative: whereas scenes of conflict and strife always occur under the gaze of the omnipresent architectural oppression of the citadel, softer character building moments such as bonding moments between resistance members, or respite after a battle typically play out in a space obscured from the view of the citadel, underground or behind shelter in order to create a feeling of sanctuary from the motifs of oppression *(Figure 7.3)*.

Figure 7.3: the Citadel is almost always visible in the background above City 17 as a waypoint for the player and a motif for oppression.
VALVE CORPORATION (2004). *Half Life 2*, video game: PC, Xbox, Xbox 360, Playstation 3, Valve Corporation

Valve's control of the player's path extends beyond influencing the pace and tone of the narrative. They maintain an incredible economy of space in the design of their virtual environment in the player unconsciously loops back upon themselves and makes use of vertical space to maximise the use from any one space. So that the route that the player follows is not unlike the paths seen in unicursal labyrinths. This is cleverly disguised using a series of subtle barriers, both physical and metaphorical to influence the player's path and distract them from the fabric of the virtual space, often the player is unaware that they are separated from an area they travelled through previously by just a thin wall, or a change in verticality: for example one particular section has the player travelling through Ravenholm, down alleys and streets, through buildings and over rooftops, creating a large amount of perceived space within a small virtual world. The order of these spaces is also controlled to ensure that higher elevations are traversed last so that the player cannot

'cheat' the game by jumping to a lower elevation. *Figure 7.4* shows an overhead plan of Ravenholm and the player's journey through the space, showing how Valve make use of verticality and space to conceal the complicated path taken by the player and make the most efficient use of space.

Figure 7.4: Valve uses a unicursal labyrinth approach to level design in Ravenholm, City 17 to increase the perceived space in a virtual environment.
SHEAFFER, E. (2011). *The Architecture of Half Life 2.* [online] Gaming Symmetry. Available at: < http://www.gamingsymmetry.com/architecture-of-half-life-2> [Accessed 22 Dec. 2014].

The architectural vocabulary used in City 17 also helps to reinforce the narrative. The materials used by the Combine, a strange iridescent metal, contrast harshly with the very traditional bricks and stone of the buildings. Although set in a modern timeline, City 17 is deliberately classical and Eastern European in design in order to further alienate the Combine and emphasize the clash of cultures.

"The Combine and the Resistance both appear to hold true to an architectural style that implies adapting old materials to suit new purposes: the communications relays are pieced together, the structures seemingly built out of entire sections of destroyed ships' hulls and pieces of destroyed buildings."
COTE, A. (2014). *City 17: Through war, we remember.* [online] Bridge Waterloo Architecture. Available at < http://waterlooarchitecture.com/bridge/blog/2014/08/08/city-17-through-war-we-remember/> [Accessed 22 Jan. 2015]

Figure 7.5 shows how the placement and style of Combine buildings is startling in comparison to City 17; Security walls spear from the ground and undulate with imperfect geometry, Hard Glass administration blocks jut abruptly from organic green spaces, towering black metal guard towers erupt from the sides of classical brick buildings as though just dropped in place and transportation bridges barge through roofs, using the

buildings below as supporting structure, literally crushing them under its feet. Every combine-made structure down to mundane objects such as street signage, air conditioning extracts and display monitors look as though they have been forcibly grafted onto existing buildings, strapped to lampposts or attached to public monuments like parasites squatting on the host. The buildings' original functions are clear to the player through traditional articulation of apartment blocks, or office complexes but the Combine's perversion of those functions is often a mystery. The Effect is utterly jarring, this is a city under occupation, crushed into submission by a culture so alien that co-existing is impossible.

Figure 7.5: Combine walls spear from the ground act as a barrier and a symbol of oppression for citizens. Note Combine services and structures bolted onto existing buildings like parasites.
VALVE CORPORATION (2004). *Half Life 2*, video game: PC, Xbox, Xbox 360, Playstation 3, Valve Corporation

Valve use contrasts of architectural styles to mirror the conflict in narrative. The motifs of oppression are realized in the immense scale and architectural vernacular of the Citadel, and used to define the pacing and tone of the narrative journey, which is shown to the player through a sequence of tightly controlled spaces which draw the player through a complex narrative about conflict and resistance.

Monument Valley: A Surrealist experience

Monument Valley (UsTwo, 2014), is an exploratory experience, with beautiful visuals which draw on a variety of artistic sources such as surrealist artist M.C. Escher's optical illusions seen in *figure 8.1* and surrealist films such as Tarsem Singh's *The Fall*.

"Monument Valley originated from wanting to make a game where architecture was the main character. It's a surreal exploration through fantastical architecture and impossible geometry

*where the player guides Ida through mysterious monuments, uncovering hidden paths,
unfolding optical illusions and outsmarting the enigmatic Crow People."*
(Ken Wong, Artistic designer, UsTwo)

Figure 8.1: *Monument Valley's* puzzles resemble art in their own right, as compared to Escher's illusions.
USTWO (2014). *Monument Valley*, video game: IOs, Android

At its heart *Monument Valley* is a simple puzzle game and the narrative is completely
abstract. You play as a small girl named Ida and told only that you are on a quest for
forgiveness, as you manipulate intricate monuments in order to progress to the next
level, which reveals more beautifully designed architectural monuments to solve. The
only antagonists are the harmless squawking crow figures who can only hinder, but not
block, your progress. Wong's background in art shows through in the games emphasis on
aesthetics, with each beautifully rendered stage being an artwork in itself.

*"The way that I thought about story was it would be more like a music video, where you identify
the characters and you have a vague notion of their relationships and what's happening, but it's
very much left up to interpretation…What matters is that we established empathy and an
emotional or intellectual connection with the person who's playing the game."*

(Ken Wong, Artistic designer, UsTwo)

The game has been painted in a smooth spectrum of smooth gradients and the minimalist
use of atmospheric symphonies in the background and soft feedback sounds from correct
actions adds to the hypnotic feel of the game, where the act of experiencing the game
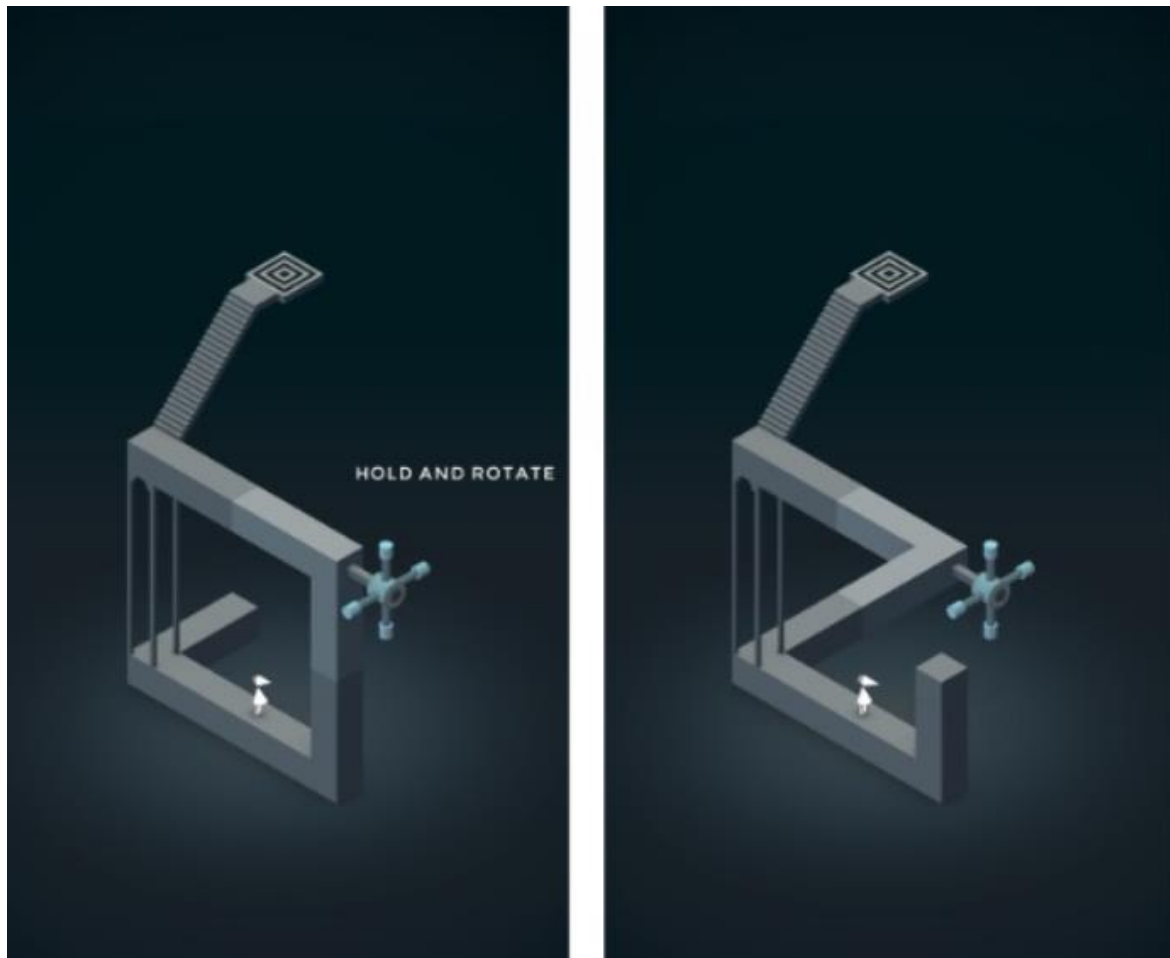becomes the objective, more so than competing each level.

Figure 8.2: The user completes impossible illusory puzzles to progress.
USTWO (2014). *Monument Valley*, video game: IOs, Android

Puzzles are solved by manipulating architectural elements, pulling, turning and sliding isometric blocks to create optical illusions which allow Ida to cross gaps or travel up previously inaccessible planes. Successful completion of each step of a puzzle, such as that seen in *Figure 8.2* is greeted by an audible response from the game as well as a shift in perspective which changes the shape of the level and allows Ida to continue on her journey. It is this feedback, both audible and visual, as well as the illusory aspect of each puzzle elicits an emotional response in the player, especially towards the climax of the adventure, seen in *Figure 8.3*, where Ida descends ever downwards into a blackness, through repeating grave structures into an impossible whiteness.
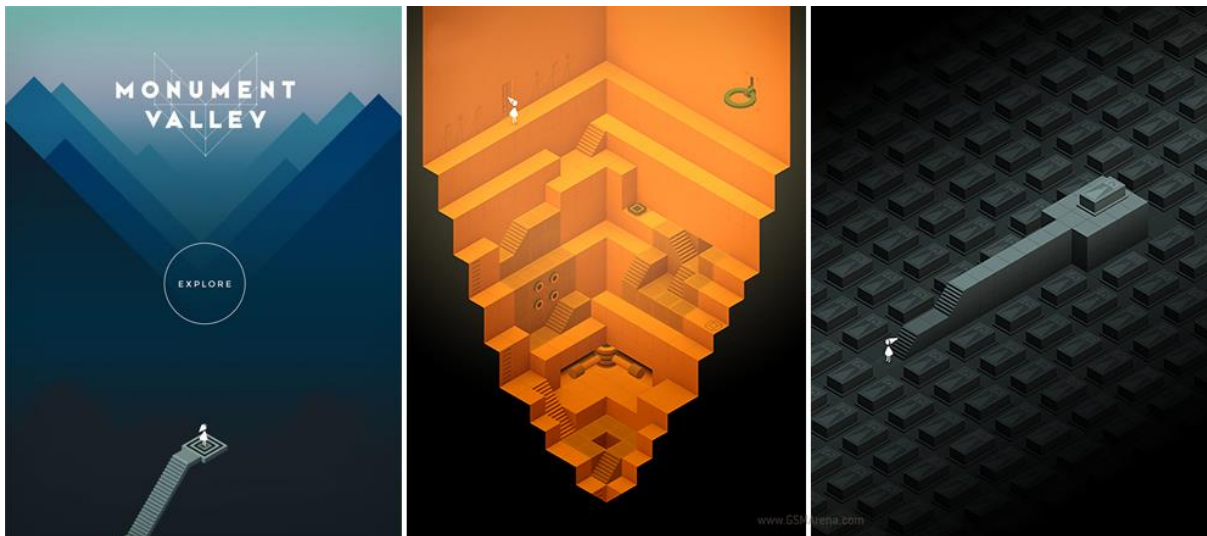
Figure 8.3: the player descends into a tomb, composition and contrast of colour and scale to create emotion.
USTWO (2014). *Monument Valley*, video game: IOs, Android

Monument Valley uses the motion of the descent, and the scale of the space to dwarf Ida and make the feel player feel small and insignificant. The contrasts from the almost agoraphobic openness of the introduction through an elaborate labyrinth into the dark tomb, is startling. The composition and repetition of the graves create a sense of foreboding wonder far beyond expectations considering the simplicity of the game.

"By balancing and contrasting different types of spaces, architecture can unfold, and choreograph the player experience to produce a much more powerful emotional impact and reaction to gameplay. The use of light and space in architecture can be used in a similar way, to draw attention to an important piece. A space that is well lit with lots of windows and skylights can feel uplifting and contrast (or balance) your darker scenes. Transitioning between the two can enhance the qualities of each."
(Jon Brouchoud, the Importance of Architecture in Video Games and Virtual Worlds, 2013)

Monument Valley uses simple architectural techniques to control the space the player inhabits; by manipulating light and space, thresholds and contrast, UsTwo creates a narrative which as an abstract experience has an almost spiritual quality which is intentionally subjective and forces the player to draw their own conclusions as to what meaning the creators intended the view to draw from the experience.

Minecraft: the Shaping of Worlds

In previous examples it was seen that architecture can be used to steer narrative in a direction, reinforce setting or elicit an emotional response, but can the creation of architecture become a part of the narrative journey in itself?

Danish architect Biarke Ingels, pictured in *figure 9.1*, believes that it is not only possible, but essential to the future of architecture in virtual spaces. In his short film, *the Future of Storytelling* (Dezeen Magazine, 2014) he states that architecture must adapt with the times and allow the public to "transform their own environments", drawing on principles from videogames such as *Minecraft* (Mojang, 2011).

Figure 9.1: Bjarke Ingels sketches outlandish architecture possible only in virtual worlds.
DEZEEN MAGAZINE. (2014). *Architecture should be more like Minecraft.* [online] DeZeen. Available at: < http://www.dezeen.com/2015/01/26/architecture-minecraft-bjarke-ingels-big-movie-worldcraft-future-of-storytelling/> [Accessed 28 Jan. 2015].

Minecraft (Mojang, 2011) is a sort of virtual *Lego* with potentially unlimited players who work alone or together to salvage materials from their environments to create a wide

range of materials in the form of "voxels", small cubes which can be arranged into larger forms such as sculptures, buildings or even entire cities, such as the creation shown in *figure 9.2*.

Figure 9.2: Thousands of players co-operate to create a life-size creation of Minis Tirith, Lord of the Rings. MOJANG (2011). *Minecraft*, video game: PC, Xbox 360, Xbox One, Playstation 3, Playstation 4, Mojang

Games such as *Minecraft* (Mojang, 2011), allow for new creative processes, a new kind of crowd logic for planning cities, creating stories or designing spatial structure. The narrative of the game becomes the process of architecture, the materials used decide the players movements and actions as they gather the required supplies, and the form of the building determines how players work together to complete the creation. The narrative and objective in the game in these instances becomes the creation of architecture, the planning and detailing of the city and the coordination of players as a workforce to this end.

"More than a hundred million people populate Minecraft, where they can build their own worlds and inhabit them through play. These fictional worlds empower people with the tools to transform their own environments. This is what architecture ought to be," he says. "Architecture must become Worldcraft, the craft of making our world, where our knowledge and technology doesn't limit us but rather enables us to turn surreal dreams into inhabitable space. To turn fiction into fact...turning dreams into reality with bricks and mortar. Architecture is the canvas for the stories of our lives."
(Biarke Ingels, The Future of Storytelling, Dezeen Magazine, 2014)

This form of narrative is of particular interest to game designers because it allows players to form their own branching story in between predetermined events, forming a unique

experience for every player, and is of interest to architects for the potential of the pool of knowledge, skills and ideas from such a huge number of people.

Players can log in to the servers and 'visit' these virtual creations in the way that someone might tour the works of Gaudí in Barcelona or travel to Paris to see the Notre Damme. As they visit they can simply experience the project, or they can choose to add or subtract from it, drawing their own influence from the creation and leaving their mark for the next visitor and so the narrative continues endlessly as more and more players visit the server and change the creation.

Figure 9.3: Players can 'visit' the creations of others and change them if they wish.
MOJANG (2011). *Minecraft*, video game: PC, Xbox 360, Xbox One, Playstation 3, Playstation 4, Mojang

In this way Minecraft could be said to be a perfect reflection of continual emergent narrative, as players alter the creation it evolves and the narrative continues.

WHAT IS THE ROLE OF ARCHITECTURE IN VIRTUAL NARRATIVES?

In *What is Narrative in a Digital Realm*, it was shown that narrative can take shape in a number of ways in a virtual space and through various case studies the ways in which architecture is used to shape these narratives has been examined. When taking an architectural approach to designing narrative for virtual spaces the roles of architecture could be broken down into a number of functions:

At its most basic level architecture can be used to set the user in a time or place, as well as conveying more subtle thematic points of the narrative such as political views, philosophical points or moral debates. While *Assassins Creed* (Ubisoft, 2007) uses

architectural to place the user in a place and timeframe through the expression of architectural vernacular, *Bioshock* (2K Boston, 2007) and *Half Life* 2 (Valve Corporation, 2007), express more subtle themes through the architectural choices made by the developers. This shows us that the architectural vocabulary; the materials, rhythm, arrangement of spaces can all be used to inform the setting and objective of the narrative.

Architecture can also be used in virtual worlds, just as in the real world, to direct attention, to encourage or distract, to draw people in or ward away. Subtle arrangement of spaces and visual markers can be used to influence the way in which people experience a narrative in the virtual realm. Just as the architect designs in real time and space, sight lines and sense of space are essential tools in organizing the virtual world. *Half Life* 2 (Valve Corporation, 2007) in particular uses architecture to create focal points which guide the player towards an objective, disguising the superfluous and setting a logical hierarchy of visual cues allowing the architect to control and influence the player's experience of a narrative in a virtual space.

Monument Valley (UsTwo, 2014) manages its narrative as a series of artworks which can be manipulated to solve puzzles, forming an abstract emotional journey which is open to interpretation in terms of its meaning for each player. The game shows us how the narrative can be shown to the player from a 'stage' as tableaus to be deciphered or witnessed by controlling the quality of light, spaces and thresholds the architect can influence how a player receives the narrative and the emotional state inspired by that scene.

Conversely games such as *Minecraft* (Mojang, 2011) and *Second Life* (Linden Research, 2003), while lacking aesthetic beauty or direction, show us how narrative can derive from the gameplay itself, with the player setting their own objectives and building the narrative from the process of exploration or creation within the virtual environment.

It is therefore apparent that narrative within a video game can be enhanced in a number of ways through architecture, bringing together sound, lighting, a sense of place and many other factors to drive or influence a superior narrative. Keeping in mind the ways in which architecture can shape the narrative in a digital this dissertation will now analyse the precise ways in which architecture can be used to within the virtual worlds of videogames.

CONCLUSIONS

In *An Emerging Artform* the nature of art and videogames as a medium for art was examined. It was shown that the rise of film to a viable outlet for art was possible through a need for art to constantly reinvent itself and make use of modern sources. Film as a form of art is comparable to the current state of the videogames industry in that the artistic possibilities of digital spaces is becoming more widely known and used. Whilst

many games still don't have artistic aspirations, many do strive to tell a complex narrative or convey a strong message.

What is Narrative in a Digital Realm looked at how the traditional forms of narrative such as roleplaying have made their way to the digital stage and are expressed in a number of forms including architecture. It was found that architecture in videogames can be used in a number of ways to shape the narrative in a digital space.

How Is Narrative Formed Through Virtual Architecture? Used a number of games as case studies to investigate how architecture helps to shape a narrative. Through the case studies the ways in which architecture can shape the narrative emerged. Architecture can play a vital role in setting a scene in the player's mind, by placing them within a place, time or context. It can influence the user's behaviours in order to deliver the narrative in the way the designer intended, controlling pace, direction and order; it can be used to inspire various emotions by managing light space and form; it can be used as a tool for narrative where the player drives their own narrative through architectural exploration.

As the case studies show, the best uses of architecture within games perform a number of these functions simultaneously, enhancing and defining the narrative in a number of different ways from the subtle to the obvious. Architecture can become built in to the game spatially rather than as a physical construction, where narrative and architecture are interwoven so as to be indistinguishable from one another, it creates the space in which the narrative takes place, informs the users behaviour and journey through that space, inspires the appropriate emotional response to the thematic content and allows the user to feed back into the narrative and therefore take part of the responsibility for the narrative artform onto themselves.

"Architecture in video games… will almost certainly, someday (if it isn't already), become something even greater than physical architecture – most certainly deserving the most careful consideration, care and attention in design development. Virtual architecture holds the potential to evoke an even deeper connection… becoming almost transcendental."
(Jon Brouchoud, the Importance of Architecture in Video Games and Virtual Worlds, 2013)

Architecture could be described as the coming together of various forms of artistic expression. The application and expression of this union is where the art of architecture as a narrative tool lies. As videogames continue to advance and develop strange and complicated architectural rules of their own the possibility exists that architecture might transcend the bonds of physical and economic limitations in the virtual environment to become something wholly narrative, free to direct user experiences and create powerful connections to the players awareness.

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