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Design & Evaluation of a Video Game Exploring Different

Environmental Narrative Techniques

by

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Abstract

With the rising popularity of the games industry a discussion has spawned on if it is an acceptable medium to convey stories. Many developers have created games focusing on story and the idea of narrative in games has been criticised and praised alike. This project researches into the arguments both for and against narrative's inclusion in games. Environmental techniques are then explored with a selection chosen to be implemented into a game level using the Unity3D engine. Data received on player's perception of narrative within the level is analysed and each technique's success is critiqued, answering both questions posed by the paper: can a game tell a story and if so can environmental techniques be used to effectively tell a story?

Contents

Introduction

The video games industry has quickly risen and become a large part of modern day entertainment with storytelling arguably a contributor to its triumph. From the days of Donkey Kong in arcades to award shows acknowledging best stories, it is clear that video games with a narrative are a success in one way or another. However, the idea of video games telling stories is not a completely accepted one. Ludology against narratology has been a longstanding debate that poses the question of whether a story and video game can exist together. It is argued that narration and interactivity cannot coexist and thus games cannot tell stories; however, without a player making choices and interactions the story will never be told.

As with other mediums, different techniques can be utilised when attempting to tell a story within a game. Due to the nature of the relationship between a video game and the player, environmental techniques can be effective devices when trying to portray a narrative in an interactive setting. Unlike a film or a book, players of a video game can be given the power to move through the setting in any way they please. While a story within a game may still be linear, the way that it is told has much less restriction than if it were in another form of media. A game level architecture can be carefully designed to contain elements of story in more ways than just dialogue or text. With the player controlling a character in their own way through either a 2D or 3D world, story can be discovered, rather than told. Environmental techniques can be powerful mechanics that many developers have used in games over the last few decades.

This project will initially discuss research into narrative and various methods of environmental storytelling techniques in video games. Further, it will explore the development of the project, looking at the design process of the story and the technical implementation of each technique. Testing of the level will take place, gathering input from users for evaluation into each of the techniques and the narrative within the game. Conclusion will be drawn from these findings and future work considered.

Aims

Can a game tell a story? – With arguments both for and against the idea it poses the question as to whether it can be done. Results from the project could help solve the ongoing discussion between ludologists and narratologists.

Can environmental techniques be used to effectively tell a story? – If it is possible to tell a story within a game, it can then be asked whether environmental narrative techniques are an effective method of this. Furthermore, developers could utilise the findings when designing games that aim to use these storytelling techniques.

Objectives

- Investigate different environmental techniques, selecting a few for use within the level.
- Create a narrative and choose which environmental techniques should be used for which story element.
- Develop the game level and mechanics using the Unity3D engine.
- Implement the narrative using the chosen environmental techniques.
- Gather data from participants that have played the level.
- Analyse the collected data to deduce if the chosen techniques were effective and why.

Literature Review

The literature review considers relevant research to aid development of the solution. It aims to gather an insight into general storytelling within games and a further, deeper understanding into environmental storytelling techniques. Testing, evaluation and level design of games are also considered to strengthen the knowledge required for implementing narrative elements within the solution.

Storytelling in Games

The first video game to have a complete story came in the form of Donkey Kong, released into arcades in 1981 (Guinness World Records, n.d.). From this moment on games have continued to contain stories in many forms with no sign of stopping. The concept of storytelling in games has not escaped criticism however, with claims the medium is unable to contain a narrative. This ludology versus narratology debate has spanned more than a decade and various arguments have been made for both sides as discussed by Aarseth (2012). Jesper Juul (1999) states "You cannot have interactivity and narrativity at the same time." By this logic it would be true that a game cannot contain a story, rather that they are two discrete entities that are experienced separately. However, the ludology argument can be criticized itself, with Dovey and Kennedy (2006) commenting "like much of the ludological critique of narrative approaches, he suggests that games should only be studied in relation to what makes them a game." In this instance Dovey and Kennedy review use of the abstract game 'Tetris' as an example, rather than a game that has been designed to have a narrative. If analysing a game that contains no narrative or choosing to only analyse the game mechanics, results may show that games cannot tell stories.

The combination of narrative and interactivity can be considered important when portraying a story within a game. "No matter what happens, the outcome is one that you have helped create. You cannot play Blade Runner without paying attention to the story, as at any turn you wouldn't know what to do next." (Egenfeldt-Nielsen et al. 2008) With no input from a player, there would be no progression of a character in a video game and without the character moving on this journey it is impossible for the story to be told. Similarly, by the player electing to ignore all narrative elements, the game can become more difficult, in some cases even impossible, to complete due to the lack of knowledge they have about their journey.

The question can be posed as to whether a video game can be treated as text. If the answer is yes, it would be possible to study a video game narrative in the same way you would a film or book, solidifying the idea that a video game can tell a story. According to Dovey and Kennedy (2006), "the position taken by the London University Institute of Education team at the end of a two-year study into game textuality is typical in their necessity to mix and match methodologies to understand the game." While having to use multiple methodologies to be able to study a game as text, it was considered possible. However, a video game is unlikely to be made textual analysis in mind, rather- player experience. Simons (2007) expects "When trying to look ahead, game players probably weigh the outcomes of the alternative choices they are confronted with 'narratively,' too. These narratives constitute a domain that narratives and games have in common rather than that it sets them apart." If a player values the narrative outcome of their choices within a game it proves there is at least some level of connection between them and the story, implying a successful portrayal.

Environmental Storytelling Techniques

Video game worlds have the powerful mechanic of an extra dimension- player control. Stories do not have to be told in a completely linear fashion and not every piece of information requires presentation to the player like traditional text. Dubbelman (2016) writes "Environmental storytelling is indeed one of the most important narrative devices for games". By using environmental techniques, narrative can be conveyed in multiple different fashions. Carson (2000) has wealth of experience in designing both computer games and theme parks, commenting on the importance of a video game environment in correspondence to narrative: "In many respects, it is the physical space that does much of the work of conveying the story the designers are trying to tell." Just by the area the player finds their character in can explain top level themes in the narrative. However, environmental storytelling is not limited to what you can see in the physical space around you, with Jenkins (2004) classifying techniques into four different categories: Evocative Spaces, Enacting Stories, Embedded Narratives and Emergent Narratives.

Evocative spaces offer an extension on an already known story, which then allows the player to enter a space that is familiar but explore it in an entirely new way. Jenkins (2004) continues to state that "the Star Wars game exists in dialogue with the films, conveying new narrative experiences through its creative manipulation of environmental details." In this instance, the Star Wars game is not a retelling of the story in the film, but rather an extension of the narrative that expands the experience of the Star Wars universe. Dubbelman (2011) further supports the use of a video games as narrative extension "These presentological affordances of games allow developers to explore aspects of stories that other media expand less on." Evocative spaces can be valuable when acting on already established material by using previously named worlds or characters and exploring them in ways that differ to the source. They will be utilised in the assumption that the player already has knowledge on the subject, but will not necessarily be completely devoid of accompanying narrative to stop the player becoming completely lost. Jenkins continues to explain that the best way of gaining a full understanding of the narrative would be achieved by following the story across all the media channels. Nitsche (2008) also discusses the use of evocative elements and the player's positioning in the game world, stating "but it comes to life only through the work of the player."

Enacting stories are a collection of stories that promote special exploration and are "pushed forward by the character's movement across the map. Their resolution often hinges on the player's reaching their final destination". Further, Jenkins (2004) states that when building a game to implement the use of enacting stories, the geography of the level must be taken into consideration for plot points. Jenkins also references 'Micronarratives', which are short moments of narrative that add to the overall player experience whether it be across a large plot arc or a small situation such as a sports event: "One can imagine a simple sequence of preprogramed actions through which an opposing player responds to your successful touchdown in a football game as a micronarrative." (Jenkins 2004) There may be many micronarratives all within one story, contributing to the outcome of a larger narrative.

Embedded narrative makes use of artefacts to give across information in certain spaces throughout the game environment. You may find exclusive narrative in areas that do not require visiting which is additive to the overall plot within the game. "Game designers have developed a variety of kludges which allow them to prompt players or steer them towards narratively salient spaces." Here Jenkins (2004) talks about the way environments can be created to coax

players towards a plot artefact, however in some cases it would still be possible to navigate through the game avoiding these entirely. Hidden chambers or corridors could offer a mural on the wall or even something as simple as a piece of parchment accompanied with text which may provide deeper insight into the story. By using embedded narrative techniques such as these the player is rewarded narratively, but it is reliant on them acting upon instinct to explore.

Emergent narratives develop through the gameplay rather than being preprogrammed. In genres such as sandbox games, players can create their own narratives and stories which are only limited by their imagination and the overall world rules of the game. "Most players come away from spending time with The Sims with some degree of narrative satisfaction." (Jenkins 2004) The Sims has no narrative element out of the box, rather, the tools to create your own narrative instead. With the ability to design your own character and a variety of lifestyle choices available for them, games such as this have technically infinite possibilities for the story that you create.

Testing and Evaluation

During development of a game, testing is a very important process that must be completed to ensure it is not only balanced and playable, but also enjoyable. "Self-testing is most valuable in the foundation stage of a prototype when you are experimenting with fundamental concepts. It is a large part of the process that enables you to come up with the core mechanics for the system." (Fullerton 2014) By practising self-testing, the opportunity to gauge an idea of the final product arises and any necessary changes can be made. Fullerton then discusses the use of playtesting with confidants. Bringing new people into the testing process means new angle will be taken when looking at the game, providing valuable feedback of issues that may not be caught when going through the self-testing process.

On completion of a game, evaluation of the finished product will provide feedback from players that have not been involved within the development process. Denisova et al. (2016) looks at different methods to gather feedback on player experience, analysing game experience questionnaires. Looking at the Immersive Experience Questionnaire, the Game Engagement Questionnaire and the Player Experience of Need Satisfaction it was concluded; "As things currently stand, all three seem to function as reasonable measures of player engagement in a game. However, we suggest that there is opportunity to develop a more refined questionnaire" (Denisova et al. 2016) Further, Qin et al. (2009) looks at measuring player immersion specifically in the computer game narrative and includes six dimensions within a questionnaire: Curiosity, Concentration, Control, Challenge, Comprehension and Empathy concluding that "Most studies only consider the computer game narrative as one aspect of computer games." and that "The Instrument proposed in this study provides a starting point for future research."

Game Design

When designing a game to include a narrative, the level architecture must support the inclusion of story and gameplay together. In Totten's book 'An Architectural Approach to Level Design' (Totten 2014) he discusses the use of level design as a mechanic to tell narrative, stating that "Designers should be familiar with the following four different types of narrative space and how they embody and support different types of narratives: evocative spaces, staging spaces,

embedded spaces, resource-providing spaces." Each of these techniques offers a way of presenting narrative. Evocative space references the previously discussed work of Jenkins (2004), using familiar environments as the focus for the level design. Staging spaces "are often unique and of large scale" (Totten, 2014) acting as an area for climatic battle or a narrative event such as a cutscene. Embedded spaces differ slightly from embedded narrative. The use of embedded space may have narrative built into the architecture of the environment itself, like murals within a church room or graffiti on the wall. Resource-providing spaces can have "landmarks and interactive elements give users incentives to utilise level spaces for more than just travel" (Totten, 2014) with areas like these structured specifically for player interaction in multiplayer games.

Design of the interface can also extend the narrative experience. Bizzocchi et al. (2011) writes about the use of changing the functionality of the cursor in a puzzle game. "This made gameplay more challenging, but at the same time it reflected the dysfunctional character of one of the protagonists." Designing the interface to match narrative elements can act as a mechanic in the gameplay but also act as a subtle plot device.

Design Process

Story Design

This project aims to create a game level that utilises several environmental storytelling techniques to help portray a story. With primary research conducted into environmental techniques, the process of writing a narrative can begin. Due to the nature of story within video games, a different approach must be taken than for a film or book. Video games need to accommodate for player interaction and so narrative can rarely, if ever, be continuous.

The first step to creating narrative involves development of a setting and theme. Hargood et al. (2008) offers an example of a thematic model of story that shows themes broken down into motifs and then features. Elements of the story can then be linked to discourse, the different mechanics used to present these within the game. Following the structure of this model, the main themes of the level can be seen in Figure 1.
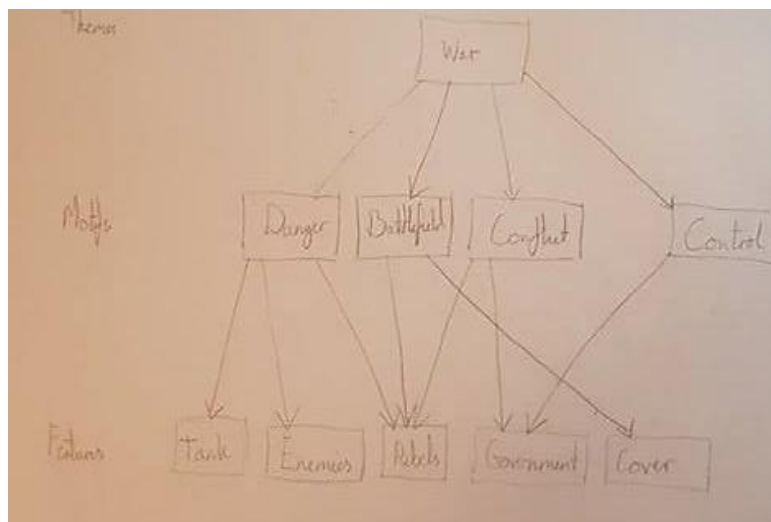

Figure 1: The main themes depicted in a thematic model of story

After themes have been established a general story outline for the level can be created. Answering the questions 'Who, What, Where, Why and When' act as a solid basis for a narrative:

Who?

Identity of the character is less important due to the focus of the project being on environmental techniques, rather than characterisation. Because of this, the question of 'who?' can be generic with the choice being a male, aged between 25 and 35.

What?

The previous established theme of war acts as the main 'what?' within the story, broken down further into a conflict between a Government and a rebellion formed of civilians.

Where?

The choice of 'where?' will have heavy influence in the design of the level and the environment which the storytelling techniques will be contained, the choice being a city in the western part of the world.

Why?

Explanation of 'why?' there is a rebellion and consequently the war follows typical reasoning of a civil war, an overbearing Government causes the civilians to rise and attempt to fight back.

When?

While the choice of 'when?' will not alter the larger scope of the narrative in question, it will need to be considered when designing and developing the level. The chosen time setting is between 2010 and 2020.

With the narrative fleshed out the techniques to be explored must be selected - Jenkins' four categories of environmental techniques act as a solid start (Jenkins 2004). As the level will not be based on an already existing story and the solution has a predetermined narrative, any form of evocative spaces and emergent narrative can be ruled out as choices. Krainert (2014) discusses the use of artefacts to tell stories and how an object within a game environment can add to the narrative. Krainert's example of artefact use coincides with the embedded narrative category defined by Jenkins, making it an interesting technique to explore within the level.

In Totten's 'An Architectural Approach to Level Design' the use of rewarding exploration with optional dialogue within the games 'Half-Life 2' and 'The Legend of Zelda: Majora's Mask' is found to be a powerful technique for portraying narrative. Depending on the content of the optional dialogue, implementing this can fall in both the category embedded narrative and enacting stories.

Cutscenes have been a staple technique used in games for decades and can be utilised in many ways. In 'Rules of Play Game Design' Salen and Zimmerman (2004) explain how cutscenes can be utilised to provide story arc with prescribed moments. Cutscenes are versatile and can be either a full motion video or an in game cutscene, making them an adaptable choice for use in the solution.

Each narrative element needs to have a chosen environmental technique assigned to represent it in the solution. A list of the narrative elements further broken down follows:

Main plot elements:

- War
- Characters (supporting/main)
- Time setting (2010- 2020)
- Setting (Chicago/General Western World City)
- Rebels
- Government vs Civilians

Minor plot elements:

- Factions
- Rebels Winning the War
- Nuke Development
- War duration (almost 3 years)
- Single body Government
- GPD (Government Privatised Defence)

The 'main' plot elements can be described as fundamental parts of the narrative which will feature prominently throughout the level, whereas the 'minor' plot elements are additional narrative which may only serve as extra details which enhance the story. With these defined they can be matched with an environmental technique as seen in Figure 2.

Technique	Plot Element	
	Major	Minor
Artefacts	• War • Time Setting • Setting • Government vs Civilians	
Optional Dialogue		• Factions • Rebels Winning War • Nuke Development • War Duration • Single Body Government • GPD
Cutscenes	• War • Characters • Time Setting • Rebels	

Figure 2: A table depicting the selection of plot elements and corresponding environmental technique.

The choice of using the optional dialogue technique for all minor plot elements is enforced by Totten's explanation: "Optional narratives can be important for games, as they give players additional incentives to test the limits of gamespace and make players feel as though they are privy to privileged information." (Totten, 2014) Similarly, Neitzel (2014) writes "Computer game programs almost always contain infrastructures that enable the player to actualise multilinear chains of actions and events… there are alternative paths or chains of events from which the player may choose." Using optional dialogue to portray the minor elements will need a method that suits the tone of the game. As the main character and supporting character will have the ability to communicate freely during the level, optional dialogue can exist in the form of 'area triggered dialogue'- involving a brief conversation between both characters that include one or more plot elements. Similarly, the technique 'overheard conversations' can be employed. While within a game level it may normally be of the player's best interest to stay away from threats, having enemies strategically placed and accompanied with an overheard conversation can act as an effective vessel of optional dialogue. This may prove a solid example of Totten's "test the limits of gamespace" description (Totten, 2014) as well as fitting in

Jenkins' Enacting Stories category: "stories which respond to alternative aesthetic principles, privileging spatial exploration over plot development." (Jenkins 2004)

Artefacts within games can have a wide variety of usage and come in many forms, making them a viable choice to portray different major plot elements. "Embedded Narrative is present when the player can evolve a sense of story over time by stumbling across spaces and objects or artefacts that become familiar and are thus decoded for embedded meaning or importance." (Brand 2014) The selection of 'War', 'Time Setting' and 'Government vs Civilians' to be portrayed through artefacts is to allow the player to gain an understanding of these plot elements throughout the duration of the level, similar to Atkins and Krzywinska's (2007) description of embedded use. Rather than having them exposed to the player in a one-off situation like the optional dialogue, they may be placed in multiple areas over the level so as the player is exposed to them more causing the narrative to become more familiar. Totten (2014) references 'The Last Of Us' saying, "tanks and cars littered through the streets in a zombie game may show that there was at one point a chaotic clash" and further "the placing and arrangement of such assets tell a story". A similar approach can be taken in this instant, to display the concept of war; army vehicles, weapons and objects alike can be used to populate the level. It may be expected that rebels and the government would use different vehicles in the war and, with careful placement, previous conflicts that have taken place can be conveyed through assets alone. Using modern vehicles and weapons will satisfy the time period story element as it is hoped a player would not see a modern-day asset and assume the game takes place within another period like World War II.

Krainert (2014) discusses that not all players will be interested in narrative so the use of storytelling artefacts within levels allows "games to offer a deepening of the storyworld and a widening of the encompassed stories without forcing the player to invest further time and effort into their engagement with the narrative." Totten (2014) highlights the use of subtle environment change in 'Bioshock Infinite' by writing "to establish this switch while allowing gameplay to continue, propaganda posters switch from government focused to rebel focused." A combination of two propaganda poster types and different vehicles in various sections of the level will aim portray the elements of War, Time Setting and Government Vs Civilians, a technique enforced by Wei (2010): "…games as visual narratives present the story not just through telling but also through showing".

Cutscenes have become common occurrence within single player experiences, offering breaks in play to showcase plot and display narrative separate from interactivity in a game. In the book 'Rules of Play: Game Design Fundamentals' (Salen and Zimmerman 2004) their use as embedded narrative is discussed, with cutscenes providing story arc via prescribed moments. "In a cut-scene, the virtual camera is a movie camera, setting up time-space according to the conventions of cinematic fiction… The aim of this kind of camera, whether in a movie or in cut-scene, is to enable the viewer to project an imagined space." (Salen & Zimmerman, 2004) Using cutscenes will not only be a self-contained narrative device but will also be able to show off artefacts that are within the level and the environment of the level itself. As well as 'traditional' cutscenes that will generally act as cinematic displays, in-game cutscenes that do not use a pause in play can also be used in narrative. Between the two cutscene types the characters, rebels and idea of war can be introduced to the player.

With techniques and story established, 'fabula' as described Hargood et al. (2017) can be created formed of 'plot elements' and the techniques on how they are delivered within the game. "Fabula describes the collection of elements that comprise the story's content: its characters, events, places, and facts.". The generated fabula can be seen in figure 3 below.

• Main Character • Supporting Character • 2010-2020 • Chicago (Western City) • GPD	Cutscene

• Government vs Civilians • War	Posters

• Rebels • War	In Game Event

• Nuke Development • Rebels Winning	Overheard Conversation

• War Duration • GPD • Single body Government • Factions	Area Triggered Dialogue

• War • Time Setting • Rebels	Army Vehicles, Ammo boxes, Weapons etc

Figure 3: Each fabula design, including the plot element and the techniques that will be used to portray them.

On completion of the fabula, the development of each technique can begin. Firstly, a script for each dialogue element needed to be created. Starting with a cutscene, a list of the information that needed to be portrayed within the dialogue was established:

- Establish the secondary main character
  - Delivers information via radio to the main character.
- Set the scene of the level
  - A rebel controlled section of a city in America.
- Describe the player's role within the level
  - To reach an informant on the other side of the level and avoid being spotted.

With the script created, which can be seen in appendix F2, it had to be decided what would be shown during the cutscene. Because the focus of the project is environmental storytelling, the inclusion of the character in the cutscene was omitted to allow the focus for the player to be on the environment of the level instead. It was decided that the cutscene would be in the form of a panning camera that showcased the level to allow the player to gather a preliminary understanding of the level they were about to play.

The area triggered dialogue and overheard conversations passed through a similar design process. Each of the plot elements acting as the information that is required to be portrayed:

- War Duration
  - Almost three years.
- GPD
  - The Government Privatised Defence is the Government's army.
- Single body Government
  - All the countries throughout the world operated under one Government.
- Factions
  - The rebels are split into different groups known as factions.
- Nuke Development
  - The Government plan on using a nuke to turn the events of the war.
- Rebels Winning
  - The rebels are currently winning and forcing the Government troops to be pushed back.

Upon completion of all script writing, the process of designing the poster artefacts began. For the government propaganda poster a sense of control and commandment was desired in order to portray the idea of an overbearing system. Inspiration was taken from WW2 propaganda and posters as seen in figure 4 and 5 and also by the book 1984 (George Orwell 1949) as seen in figure 6.

Figure 4: I Want You (Flagg 1917)

Figure 5: We Can Do It! (Miller 1942)

Figure 6: Big Brother Is Watching You poster inspired by 1984 (Orwell 1949)

Phrases such as "Big Brother Is Watching You" and "I want you for U.S. Army" place emphasis on the reader of the poster in order to command them into compliance. They often feature a person that the viewer will relate to or an authority figure. A simple plain background that helps draw attention to the text is often utilised.

The rebel poster requires a theme of breaking control and uprising to portray rebellion against the Government. Inspiration came from posters that have been used in civilian protests, displayed in figure 7, 8 and 9.

Figure 7: Resist! poster

Figure 8: Power of the People poster

Figure 9: Fight Back poster

Many feature red and black colours, negative imagery and slogans that encourage rebellion with phrases such as "Resist" and "Fight Back". Many feature fists used to symbolise uprising and revolt and place emphasis on rebelling as a group as they are likely to be stronger in numbers.

The in-game event needs to act as both a mechanic in the game and a companion to the narrative to portray the 'Rebels' story element as a whole. The focus of the event is to showcase the idea of the rebels being the primary enemy in the level but also that they have control of the play area and are winning the war. Having a group of rebels moving across the play area that the player has to avoid can pose the question to the player "Why are they making this journey?" so combining this event with the fabula that portrays 'Rebels winning' will satisfy this element of the story.

The assets sourced for the level need to fit the narrative theme so a list of requirements was created:

- Modern military vehicles
- Modern weapons
- Ammo boxes
- Barriers
- General environmental assets to populate the level

Level Design

Game mechanics will influence the design of the level, so it is important to establish fundamental mechanics of the game first. The genre for the game is chosen to be 'stealth' and so the main mechanic will have the player sneaking past enemies by crouching behind cover. The reason stealth is chosen as the genre as it matches the theme of the narrative and will then strengthen the portrayal of the story. It would be unlikely to have a game focusing on war that uses mechanics of a sports or puzzle game.

The first step to designing the level is to create the play area that will contain all fundamentals of the game. Looking at street layouts of American cities on Google Maps showed that they are

all arranged in a grid system with only straight roads and intersections that are surrounded by tall buildings. As one of the story elements is the setting of the game it is important to emulate this as much as possible. An initial sketch of the level layout can be seen below.
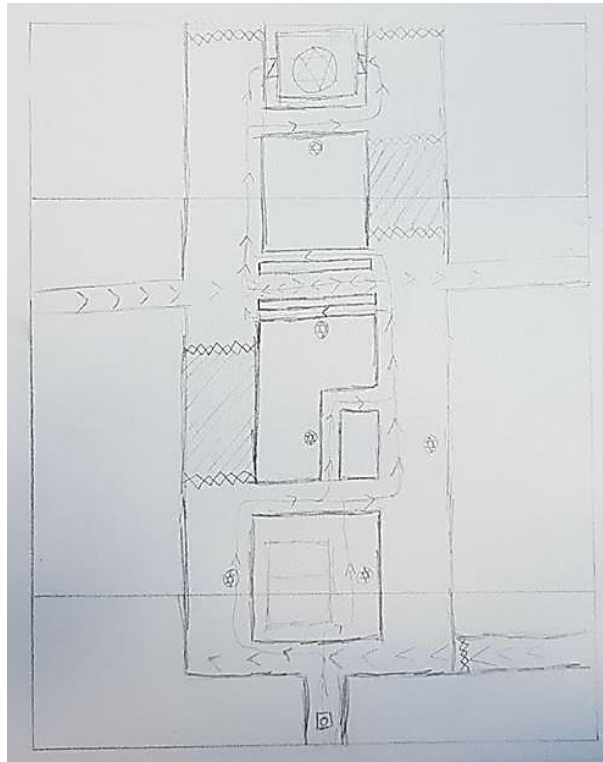

Figure 10: Initial level design sketch with stars depicting possible plot points

Next, plot points were marked on the play area as seen in figure 10 above, noting where techniques can be used to portray story elements. Totten (2014) writes about "both enticing and rewarding spaces where a player feels that important game events will happen". The in-game event and the rebels winning conversation require placement near one another but the player needs to be enticed to experience the overheard conversation for full narrative context. An extra line of dialogue was created that has the secondary character alert the player to the in-game event and suggesting that they can hide down an alleyway, one of which is where the overheard conversation is placed. This follows Jenkins' (2004) discussion of designers using kludges to steer players towards narrative spaces.

The start of the level will be the location of each of the area triggered dialogue techniques. The player will be given the choice of three pathways that all lead to the same place but feature a different story element. The player will have the option of experiencing one or all three elements, depending on whether the player is interested in exploring more to gain a deeper understanding of the narrative; as mentioned by Krainert (2014) and Totten (2014) in earlier research.

As the level aims to represent the main character moving from Government owned territory into Rebel territory, the corresponding poster placement needs to reflect that. The Government posters that feature at the start of the level are combined with cutscene dialogue that explains that the character is now entering rebel territory, while rebel posters feature deeper into the

play area. This design choice was made following Bioshock Infinite, where posters are used to dictate an environment change as discussed in Totten's book (Totten, 2014). Similarly, it is important that the general artefacts that are used to populate also reflect this change of Government and Rebel territory and so the military vehicle assets in each of the territories should be different to signify this change.

Finally, the second overheard conversation should be away from the player's path within the level to highlight its choice of being optional. As it is an overheard conversation, it will be triggered near two enemies that are out of bounds of the play area. As the player moves through the level they will be reinforced with the mechanic of staying away from enemies to avoid being caught, however this optional piece of dialogue will reward the players with narrative if they wish to explore the area and risk standing near enemies.
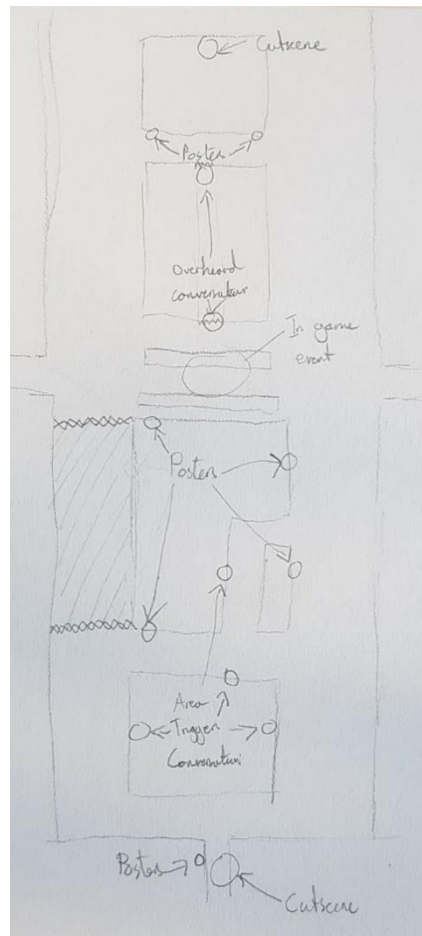

Figure 11: Revised level design sketch with technique positions annotated

The end of the level will feature a building that the player has to navigate past enemies and reach the top before finishing.
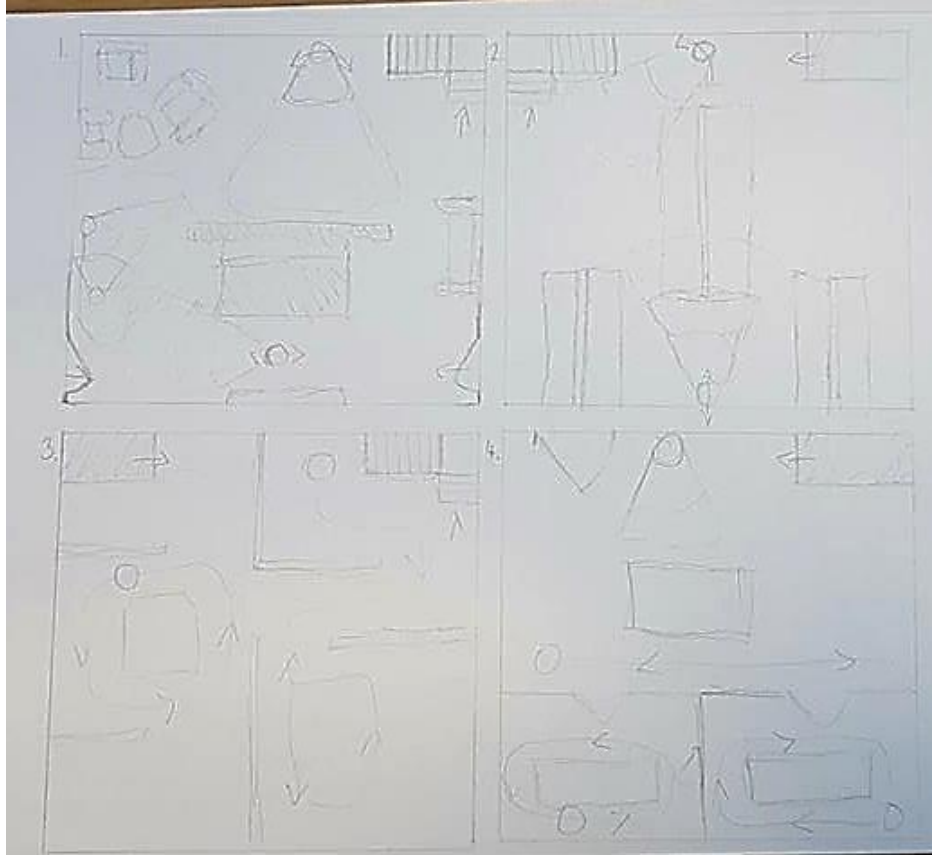
Figure 12: Sketches of the interior building layout and enemy placement

The building features enemies that patrol areas or act as sentries. The play space will be much more enclosed than the outside city and will require the player to take more care in their actions.

The building exteriors will need to portray the setting of the game. Carson (2000) writes that a player must understand where they are within 15 seconds of starting the level or they will be lost. "It is clear that games do not exist in isolation from the spaces they are played in. Game space is always connected to lived space." (McGregor 2007). As the buildings will be the main environmental asset that will act as an indication for the player on where they are, it is important they are designed to match the chosen, lived space of an American city.

Project Plan

To make sure the solution was completed in time a Gantt chart was created to plan completion of each section of the project. This can be seen in appendix B1.

Development Process and Evaluation Methods

Technical Consideration

A game engine is needed for the most optimal development of the level. There are several engines available on the market however the Unity3D engine was selected as it offers a wide variety of plugins and the ability to script using C#. Further, the creator of the solution has over two years of experience using the engine thus making it the best choice to develop the level.

Further, research was conducted into plugins that can be used to aid in development of the level and the following passed feasibility tests:

- Third Person Controller – Basic Locomotion Template
  - The controller template offers a range of customisation for the developer to choose what controls each aspect of the controller. Further, the controller has satisfactory movement and features the ability to make the character crouch which is part of an important game mechanic.
- BuildR 2 – Procedural Building Generator
  - Buildings can be created at custom heights and widths with the ability to customise façades using textures.
- Unity's Timeline
  - Game objects can be animated within the timeline and recorded for cutscene creation.
- Adobe Fuse
  - Full customisation of character models can easily be created and rigged and further exported into Mixamo online for animation.

Level Development

With the engine chosen and plugins selected, the development of the level can start. Firstly, a character controller template instance was created using the Third Person Controller plugin. The starting template for the third person controller does not feature the controls that are desired for the level; however, these are easily changed within the inspector.

The option to allow the player to jump was removed to stop players being able to escape out of bounds and instead spacebar was rebound to toggling crouch. The default character model for the controller template needed changing to one that fit the design of the level, so Adobe Fuse was employed for character model creation. Similarly, the animations that were part of the third person controller template did not suit the needs of the project and so animations were sourced through Mixamo, the companion to Adobe Fuse that deals with rigging and animating of Adobe models.

Once the character model has been replaced and the player movement has been implemented the play area can begin creation. Firstly, a large plane was created and textured to act as the floor for the character to navigate and buildings to be placed on. The initial step taken for the level development was the placement of the pavements which in turn marked out the areas where buildings will be.

Following this, white boxing of the level was completed using BuildR 2. With this plugin, building floorplans can be placed and scaled to any desired size, with specification of floor height and

wall segment width for customisation of the building façade. Using Google Maps to gather information on the general layout and heights of buildings the white boxing was completed.
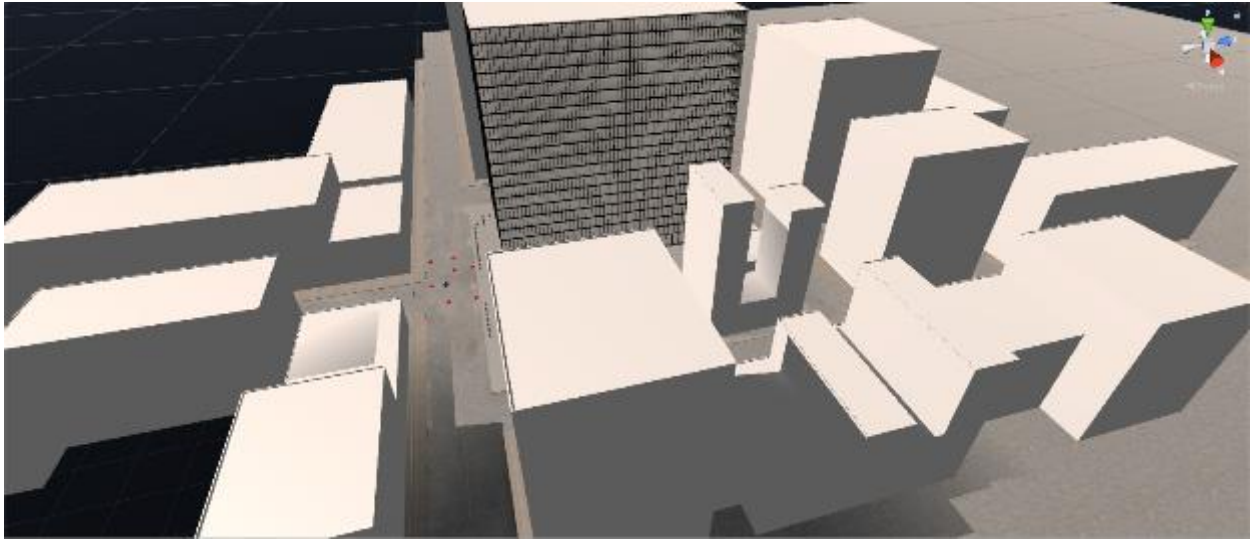

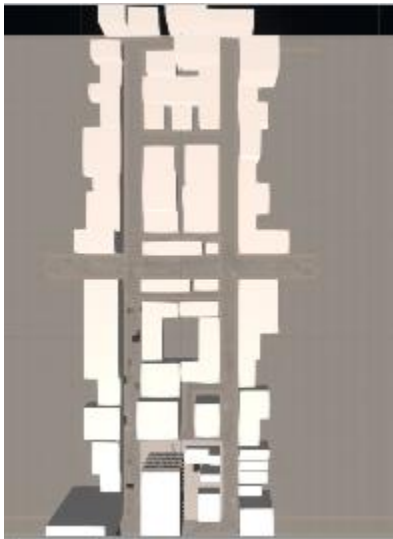*Figure 13: White boxing screenshot*

Figure 14: Screenshot of the level overview upon completion of white boxing

On completion of the level's white boxing the environmental assets were placed around the map. Blockades were created by placing assets in ways that stop the player from passing out of the playable bounds but also appear to be part of the environmental design without standing out. Concrete barriers and military vehicles act as roadblocks that could have been placed by either Government troops or rebels as seen in figure 15.

Figure 15: Example of a blockade set up within the level

Furthermore, assets were placed strategically to counter the level from looking bare or barren. By having various assets such as ammo boxes and crates throughout the map it adds to the immersion of the level and make it appear that a war is actually taking place within this city, an important part of the narrative.

Areas with enemies need to have assets placed in order for the player to navigate past without being seen. Concrete barriers and crates act as perfect assets for the player to use as cover and fit the theme of war within the level. Some enemies will have paths they patrol whereas some will be static, so areas have been designed to allow enemies that both patrol areas and are static.

As the environmental assets are one of the narrative techniques to be used within the level, it is important to try and create areas that could be considered associated with the narrative. An area has been staged to show the aftermath of a battle between the rebels and Government, using a military vehicle that is associated with each side and flame particles sourced from the Unity asset story to convey their destruction. Ammo boxes and guns litter the floor around the vehicles with bullet ridden concrete barriers set up as protection for foot soldiers. Not only do the individual assets have association with war, by combining them all to create a scene of war within the environment they will help convey their plot element further.

Figure 16: Example of environmental assets placed to convey narrative within a finished level

After the level has been populated with assets the buildings can be textured. The BuildR 2 plugin uses procedural creation of buildings so rather than creation of textures for each differently sized building, a universal 'façade' can be made that will scale correctly to the size and number of floors for a building. Using the wall sections a façade can be created and placed onto a building. Facades were created using Google Maps Street View to gain an understanding of the building design in Chicago in order to fulfil the setting of the game being in an American city.
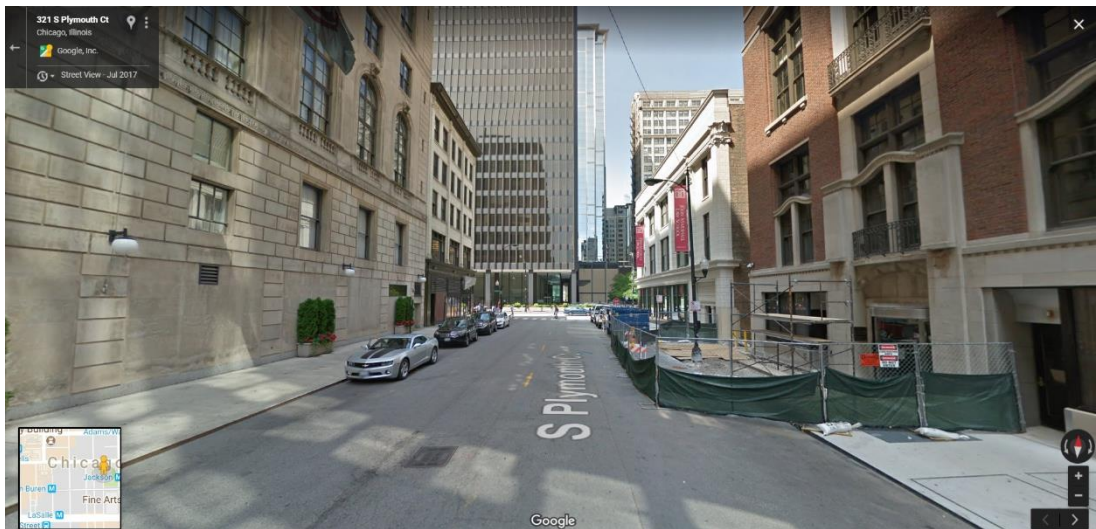

Figure 17: Google Maps screenshot of the street used for level design

Figure 18: Finished street based on the Google Maps image

Once all buildings have been textured enemies can be added to the level. First, character models need creating using Adobe Fuse, similar to the main character model. Ten different character models were created to increase the level of variety in enemy character models and increase immersion. The design of each of the enemy character models needs to match the narrative, so civilian clothes were chosen to portray the narrative element that these are rebels and not Government troops. Once imported into Unity the rigging is set up and each is given an animation according to whether they will be a static enemy or patrolling enemy.

To create a patrolling enemy within Unity requires the use of a 'NavMesh' component and a script featured in Unity's manual. Using nodes, the enemy can be programmed to follow a path of other game objects in the level as seen in figure 19. By placing down paths of nodes for the enemy to follow, patrolling routes can be created for individual enemies. The larger number of nodes used, the smoother the observed pathing of the enemy.
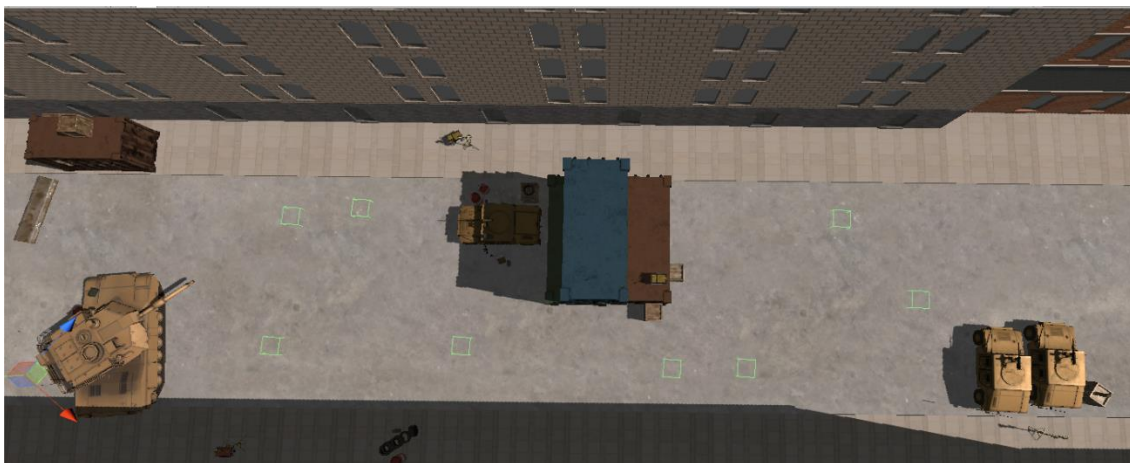

Figure 19: Screenshots of nodes used by enemies for pathing highlighted by green boxes

Static enemies were placed in both blockades to stop the player leaving the level and at various other points in the level to act as sentries for the player to pass. Enemies need a vision that the player will have to avoid otherwise they will have to restart from a checkpoint. Enemies were given two hitboxes in front of them; the first hitbox for detecting whether the player was crouching behind cover near the enemy or not and the second to detect whether the player has been seen by the enemy at distance.

Checkpoints placed throughout the level will allow the player to restart but keep some of their progress. Trigger colliders were added to several points throughout the level to act as a checkpoint zone. When the player collides with the trigger zone the player location on the map will be saved and upon loading the level, the player will spawn at their last checkpoint location.

To create a mini-map a render texture is used and the target is set as a camera that is placed above the enemy. Then an image is placed on the UI canvas and the render texture is set as the image's texture.

Story Implementation

A story handler script was created and attached to the player. This script accesses a textbox on the canvas, setting the current line of dialogue, text of the line and text colour to differentiate between characters speaking for the player.

Similar to checkpoints, trigger zones were created that will activate the dialogue when the player collides with them. Tags were added to the zone to dictate which dialogue should be played when activated. A subtitle and line class were created so subtitle lines can be dynamically created in the scene, rather than having many textboxes that need swapping in order to play dialogue.

Adobe Photoshop was used to create the two posters to be featured in the level based on the design criteria. The finished posters can be seen in appendix C1 and C2. Once created, appropriate placement was needed for the posters to ensure they were seen by players.

Figure 20: Rebel poster placement and Government poster placement (West Ham Fan TV 2017)

Using Unity's timeline the cutscene was created. The scene was cloned and a director was place on a cutscene camera. The camera was then animated to pan over the scene with the cutscene dialogue playing over the top.

Finally, the in-game event was created. Enemy paths were set up using nodes like other patrolling enemies. A trigger zone was created to spawn the enemies in when the player collided with it and start playing the associated dialogue.

Testing

When self-testing the game, enemy vision was found to be inconsistent and unbalanced, making gameplay difficult. To combat this, a different system was implemented for the enemy vision using ray casting. A ray is fired from the centre of the enemy within a radius to check whether the player is within the hitbox for the ray. Because the ray is fired from the height of 1, the ray will be blocked by any assets that the player is hiding behind. An example of this code can be found within appendix F1. With this new system, gameplay was a lot more predictable and fair.

As some enemies were obscured from view on the player's approach it sometimes came as a 'shock' when spotted. A red sphere was added to each enemy which is ignored by the main camera but appears on the mini-map. This allows for the player to anticipate enemies that they may not be able to see.

There were several points in the blockades that allowed the players to pass and exit the playable area. Extra assets were added such as crates to block them completely and keep the player within the desired bounds.

Issues

While the BuildR 2 plugin allowed for creation of building exteriors, the interior utilisation did not meet the standard required for the level. Doors cannot be created on exterior walls which means the player would not be able enter the building and a separate one would have required modelling for use in this instance. Because of this, the interior section of the level was chosen to be dropped. The interior section included no narrative elements and focused solely on the mechanics of the game so it was deemed unnecessary for inclusion in the final solution.

Development Conclusion

Upon completion of the solution, a game level with desired mechanics and narrative has been created. Further screenshots of the development process and the finished game can be seen in appendix E1 and appendix E2.

Results of Evaluation of the Software

Introduction

In order to answer the proposed questions of the project an evaluation of the level is required. Participants were recruited and questioned on the level in an interview and questionnaire scenario after playing through the level.

Questionnaire Development

The choice to use a questionnaire and interview allows for the optimal collection of data. Denisova et al. (2016) assesses and writes about the success of three different questionnaire

types and Fullerton (2014) states that it is standard to conduct evaluation testing with solo participants rather than group testing, solidifying the choice to collect data in this format.

Hargood et al. (2017) uses "Multi-Layered Deconstruction" as an evaluation method, which employs "User-driven discussion", "Interviewer-driven discussion – Fabula" and "Interviewer-driven discussion – story". By using this method, data on which techniques and story elements will be gathered for analysis.

As it is possible that the player's experience within the game can have an effect on their perception of narrative, data was collected for analysis. Questions were asked on the player's enjoyment, focus and willingness to explore. Pinelle et al. (2008) and Sweetser and Wyeth (2005) discuss the use of game heuristics and a "GameFlow" model respectively and Qin et al. (2009) uses a questionnaire to measure curiosity, concentration, comprehension, control, challenge and empathy. All of these were taken into account when creating the questionnaire which can be seen along with the consent form in appendix D1 and appendix D2. Similarly an ethics checklist had to be reviewed which is seen in appendix A1. Before the questionnaire and interview was conducted, each participant was given the title of the project and told that they would be questioned on their experience within the level, in order to give away as little information as possible on the nature of the study before they have played through the level.

Quantitative Data Analysis

The following charts depict participant results in table and graph form. The degree of each participants level of understanding is shown in figure 21 below.

Story Element	Participant Number											
	1	2	3	4	5	6	7	8	9	10	11	12
War	1	/2	1	1	1	1	1	1	1	1	1	2
Characters	2	X	3	/3	1	1	2	/2	/2	1	/2	1
Time Setting	2	2	2	2	2	2	2	2	2	2	2	2
Setting	2	2	2	/2	2	/2	2	2	2	2	2	2
Rebels	1	3	1	/3	1	2	2	/2+3	1	1	2	1
Government vs Civilians	1	/3	1	/3	1	3	2	3	1	2	2	2
Rebels Winning	/2	X	-/2	-X	2	-	/2	-	-X	2	2	1
Nuke Development	-	-	-	-	-	/2	-	-	-	-	-	-
Single Body Government	-	X	2	-	-	-	-	-	-	-	-	-
GPD	-	X	X	-	-	-	-	-	X	-	-	-
Factions	/3	-	-	X	-	X	2	X	-	-	X	-
War Duration	-	-	-	-	3	-	-	-	-	/2	-	/2
Time Taken	5:38	7:28	6:27	5:29	6:51	6:41	5:02	6:10	6:21	4:59	5:39	6:30

Story Element	Participant Number											
	13	14	15	16	17	18	19	20	21	22	23	24
War	1	1	1	1	1	1	1	1	1	1	1	1

Characters	1	1	2	2	2	/1+2	/2	1	1	2	1	3
Time Setting	2	2	2	2	2	2	2	2	2	2	2	2
Setting	2	2	/2	2	2	2	/2	2	1	2	2	2
Rebels	1	1	/1+2	1	/1+2	1	1	1	1	3	3	1
Government vs Civilians	1	2	1	3	1	2	2	2	2	X	3	1
Rebels Winning	-2	-	2	-	3	-	-	2	/1+2	-	-	1
Nuke Development	-	-	-	-	-	3	3	-	-	-	-	-
Single Body Government	X	-	-	-	X	-	-	X	-	-	X	-
GPD	X	-	-	-	/3	-	-	X	-	-	X	-
Factions	-	/2	-	X	-	X	-	-	-	X	-	/3
War Duration	-	-	3	2	-	-	X	-	3	-	-	-
Time Taken	6:17	6:03	5:58	5:32	6:25	4:59	5:29	5:41	4:56	5:11	5:43	5:11

Figure 21: Table depicting the participant's understanding of a story element. A '/' denotes partial understanding. A '-' denotes the participant did not experience that story element. An 'X' denotes no understanding. Each number refers to the question in the interview that they conveyed their understanding, if applicable

Figures 22 to 35 depict the number of participants that showed strong, partial or no understanding for each story element.
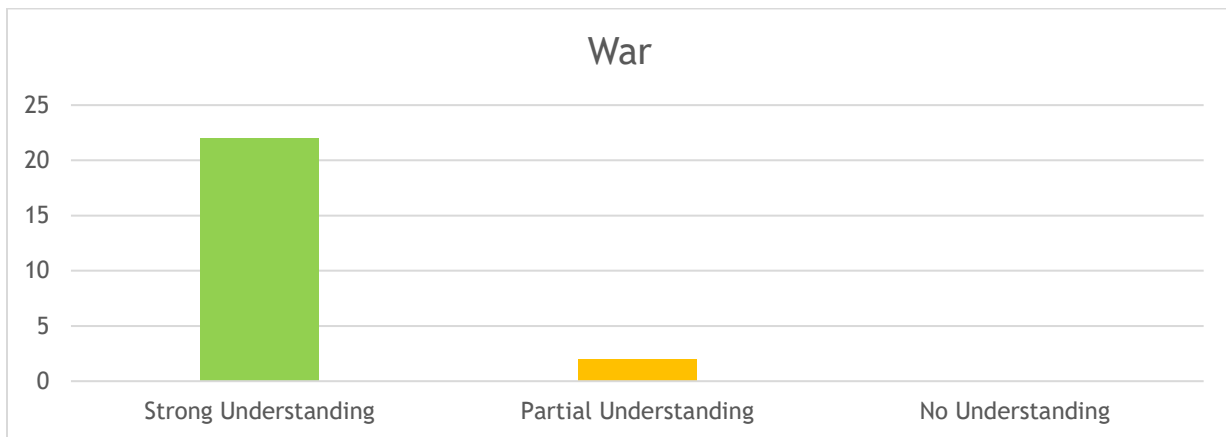
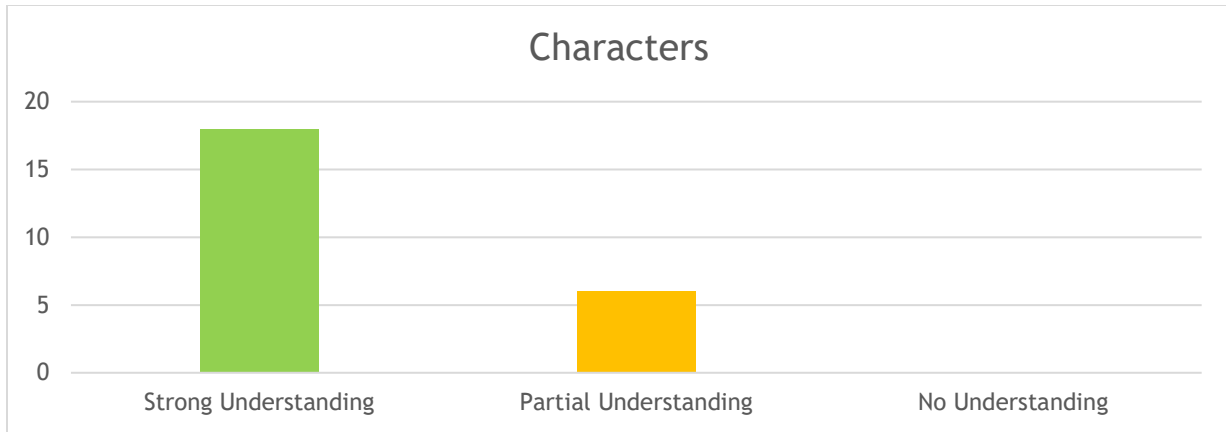*Figure 22: Column graph showing the understanding of the 'War' plot element*

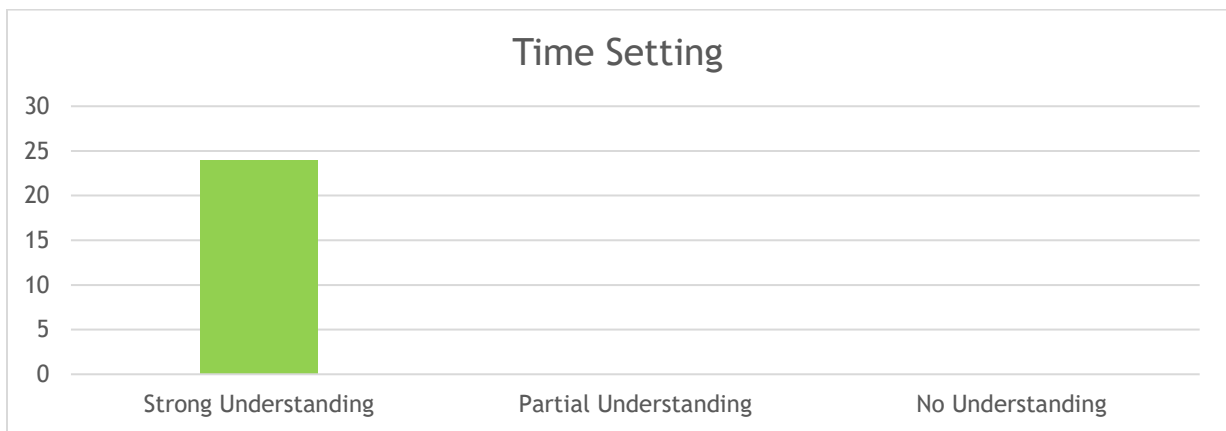*Figure 23: Column graph showing the understanding of the 'Characters' plot element*

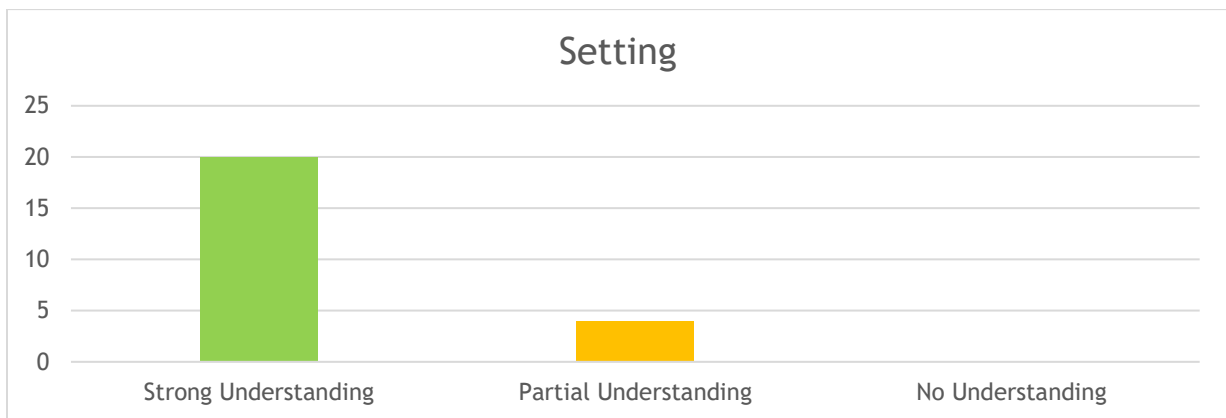*Figure 24: Column graph showing the understanding of the 'Time Setting' plot element*

Figure 25: Column graph showing the understanding of the 'Setting' plot element
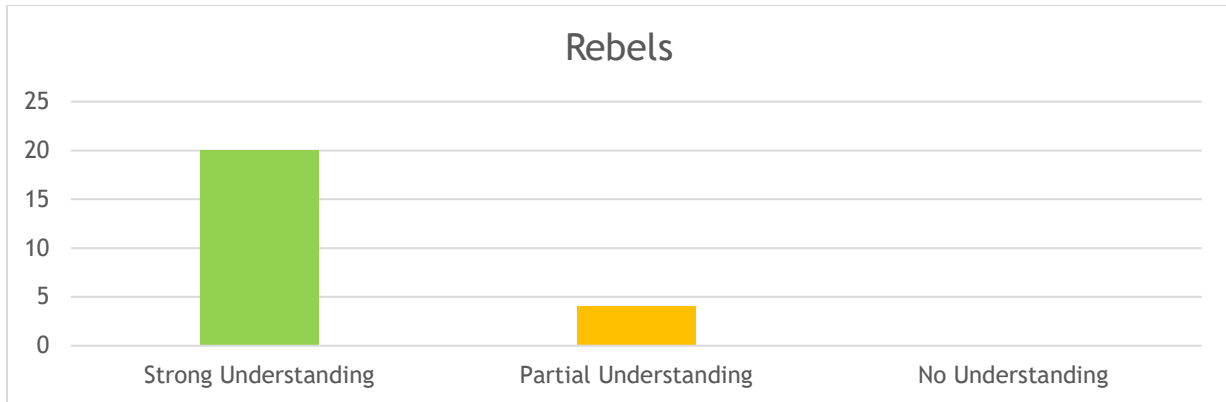
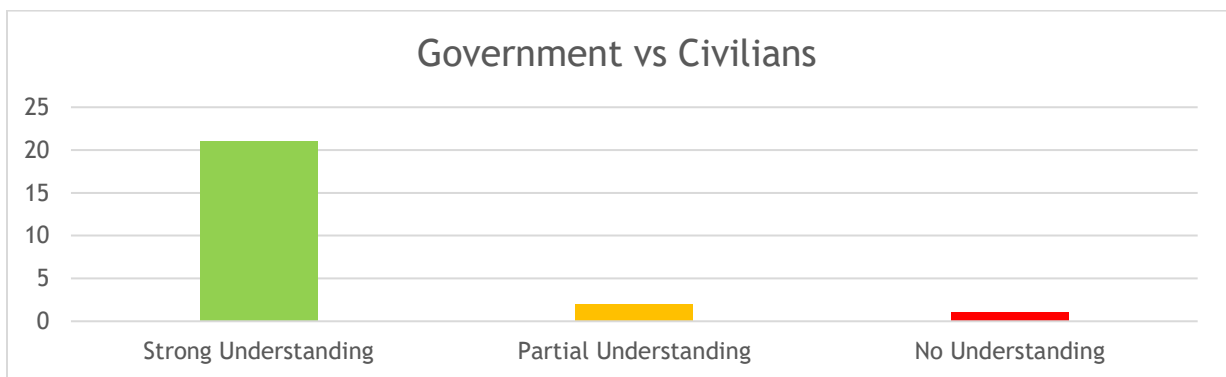*Figure 26: Column graph showing the understanding of the 'Rebels' plot element*

Figure 27: Column graph showing the understanding of the 'Government vs Civilians' plot element
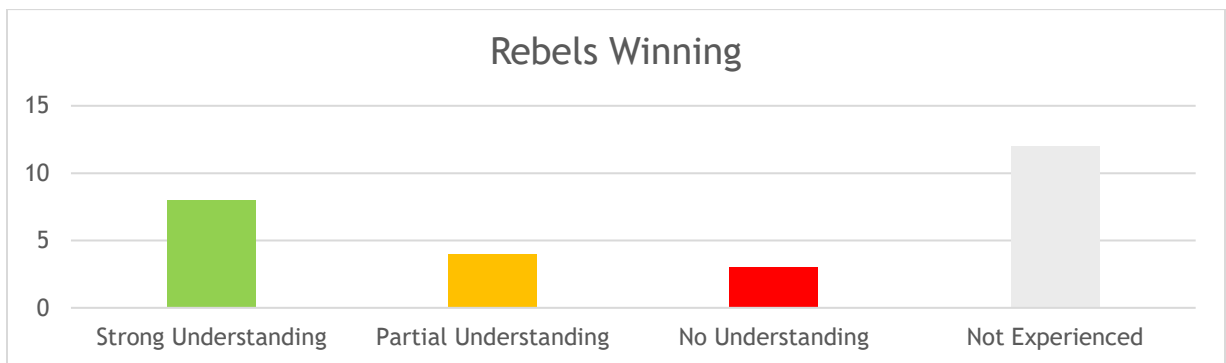

Figure 28: Column graph showing the understanding of the 'Rebels Winning' plot element
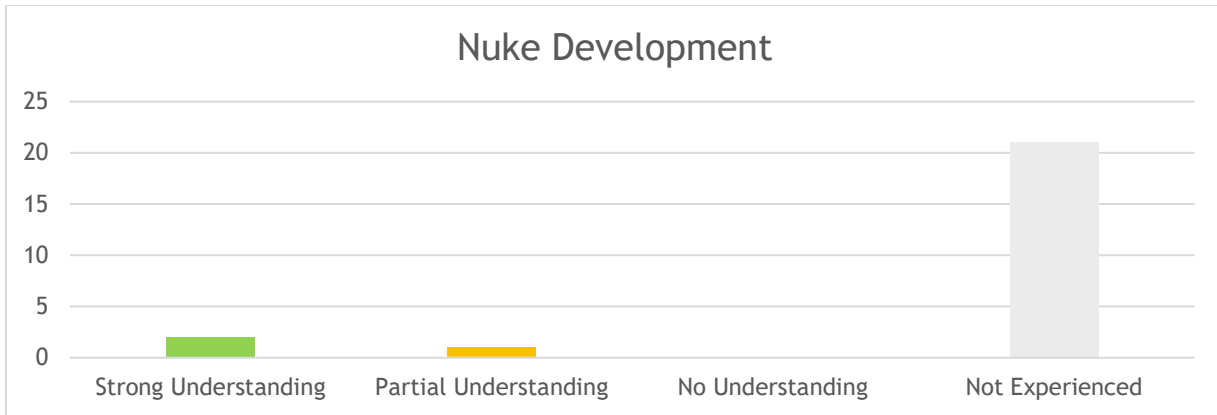
Figure 29: Column graph showing the understanding of the 'Nuke Development' plot element
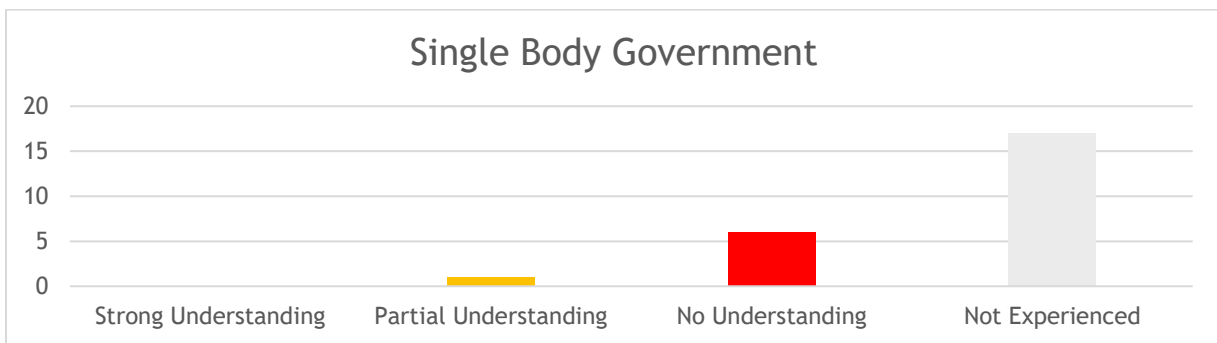

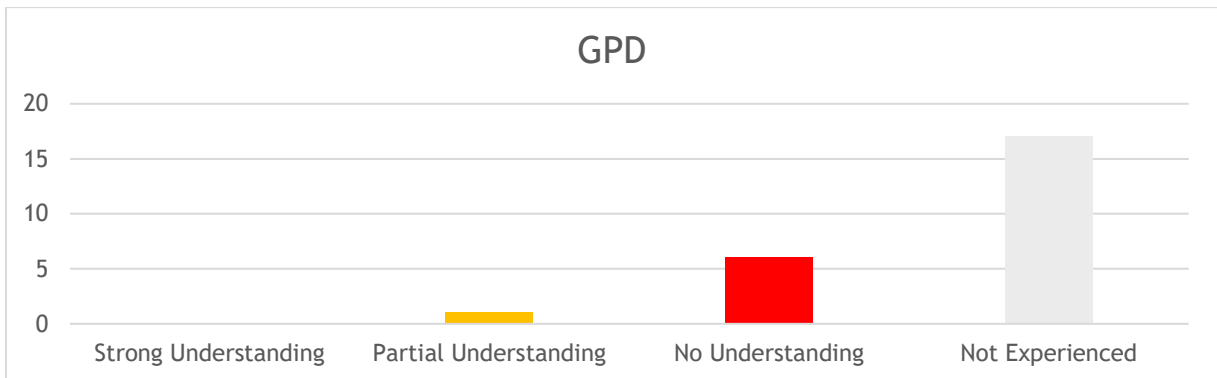*Figure 30: Column graph showing the understanding of the 'Single Body Government' plot element*

Figure 31: Column graph showing the understanding of the 'GPD' plot element
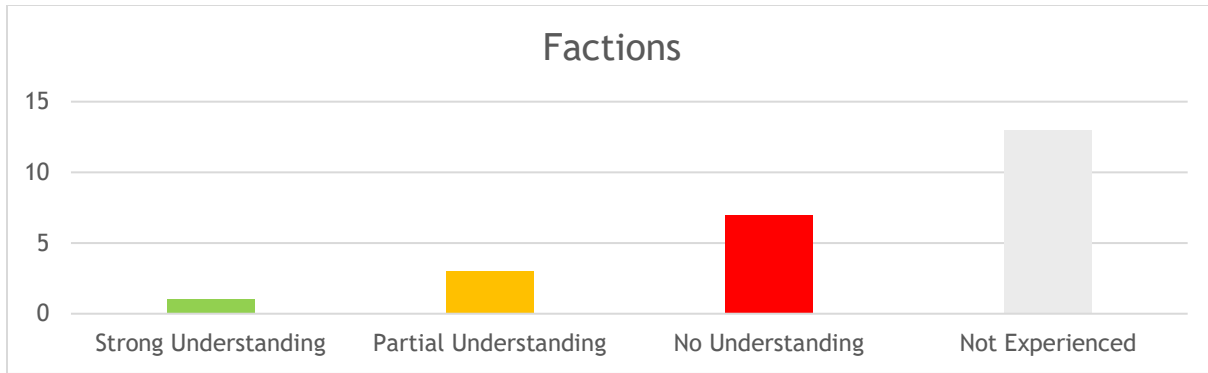
Figure 32: Column graph showing the understanding of the 'Factions' plot element
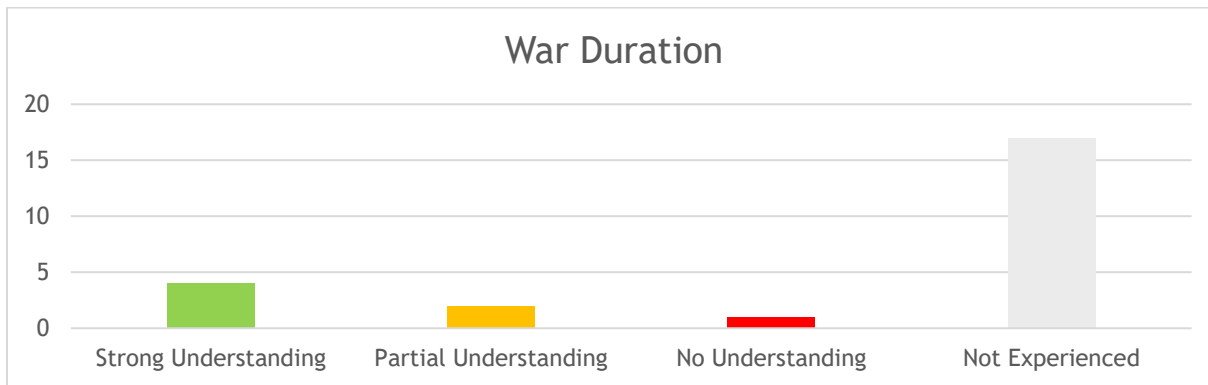

Figure 33: Column graph showing the understanding of the 'War Duration' plot element
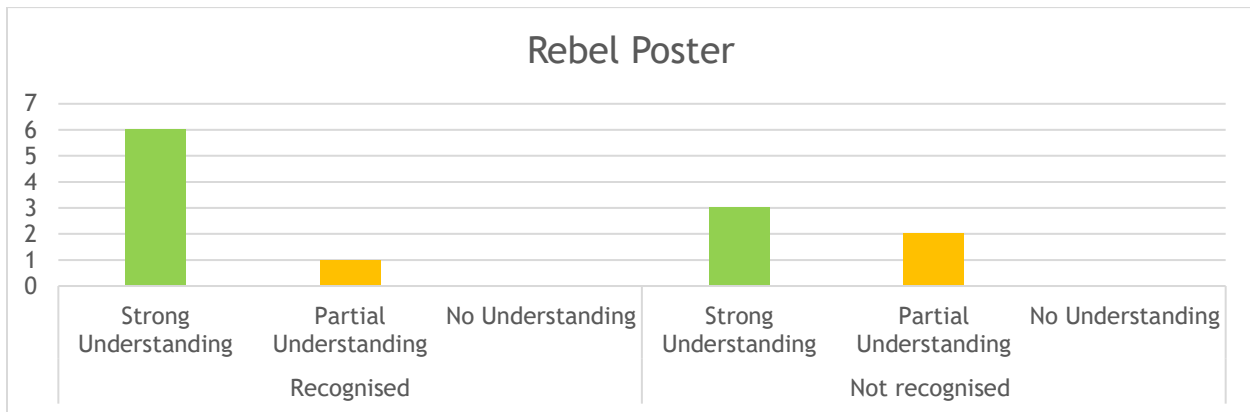

Figure 34: Column graph showing the understanding and recollection of the 'Rebel Poster' artefact
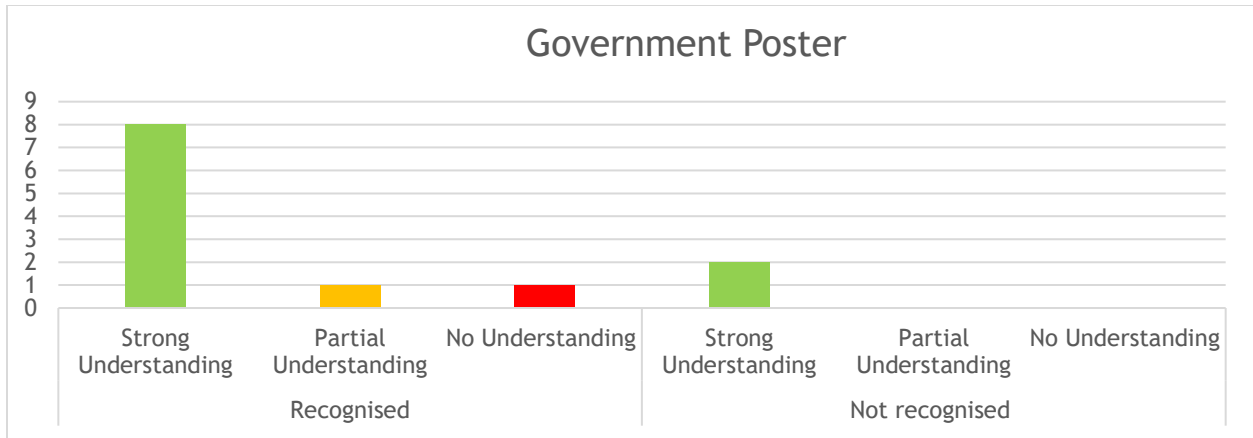
Figure 35: Column graph showing the understanding and recollection of the 'Government Poster' artefact

Participants' level of focus, enjoyment, interest to explore and time taken is depicted in Figure 36 and 37.
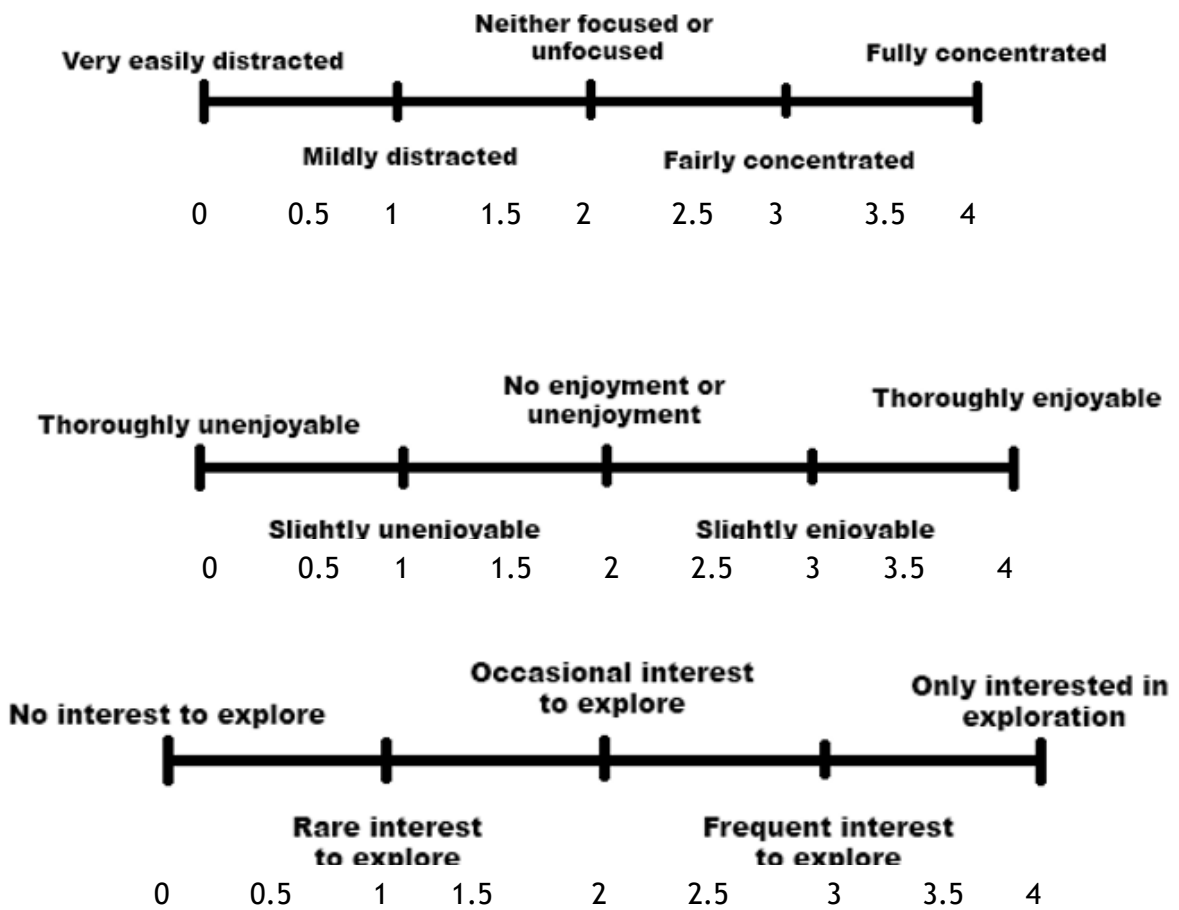

Figure 36: Numerical values applied to the scales for measuring focus, enjoyment and interest to explore in order to present the data within a table

Question	Participant Number											
	1	2	3	4	5	6	7	8	9	10	11	12
Time Spent Gaming	4	4	3	4	2	1	3	3	3	4	3	4
Focus	2	3.5	3	2	2.5	1.75	3	2	4	3	3	2.75
Enjoyment	3	3.5	4	2.5	3	3.5	3.5	3	2	3	4	3
Curiosity	1	2	2	3.5	1.5	2.5	0.5	3	3.5	3	2	2.75

Question	Participant Number											
	13	14	15	16	17	18	19	20	21	22	23	24
Time Spent Gaming	2	1	3	1	2	1	4	3	2	3	3	4
Focus	3	3	2.5	4	3	2.5	3.75	4	2.5	2	2	3
Enjoyment	2	3	4	2.75	3	2.75	2	2.75	3	3.75	2.5	4
Curiosity	3	2.5	2.75	1	2	1.5	3.5	2.5	3	4	3.75	2

Figure 37: Participant focus, enjoyment, interest to explore and time spent gaming depicted in a table. For time spent gaming: 0 denotes 'I don't play games at all', 1 denotes 'I occasionally play games', 2 denotes 'I frequently play games' and 4 denotes 'I spend a lot of time playing games'

Qualitative Data Analysis

Artefacts Analysis

The main plot element within the level is 'War' which is portrayed primarily by the artefacts technique, but also by cutscenes. This story element was received well by participants with 22 out of the 24 showing a strong understanding of the narrative element in the first question. When asked why, the majority of participants answered that the assets such as ammo boxes and tanks plus the inclusion of enemies with guns were the prominent reasons to believe there was a war. By choosing assets such as ammo boxes, military vehicles and weapons to populate the level it has shown the success of using artefacts as a technique to portray a narrative element. The cutscene itself was not mentioned as to why a participant knew the plot element of war, however because the assets are shown within the cutscene it is entirely possible that the technique helped strength the use of assets and that the combination of the two is what gave such a strong response for this story element.

A similar case can be observed with the 'Time Setting' story element, again portrayed using artefacts and cutscenes. 100% of participants could correctly identify the time setting in the second question and gave similar reasoning as to their understanding of the 'war' element, the assets in the level and the design of the buildings. It is likely that the success of the artefacts technique to display narrative elements is down to the simplicity of the information they attempt to convey and the nature of their presentation. Because the assets are contained through the entirety of the level, the participant has a long exposure to that technique. Further, the element of war and the period in which the level is set is a simple piece of information to interpret, in comparison to a more detailed plot point that might need more thought from the participant.

Cutscenes should not be ruled out in the success of the portrayal of these two story elements. While the artefacts proved a more successful technique from the evaluation, it is possible that

the cutscenes helped solidify their use within the level. As during the cutscene the game requires no input from the participant, it is likely they have a chance to visually take in the environment displayed to them at the time and thus gain a stronger exposure to the artefacts and gain a better understanding of what they are trying to convey.

When questioning participants on the artefacts that portray 'Government vs Civilians', the Government propaganda poster yielded a higher recollection than the rebel poster with 83.33% and 58.33% recollection respectively. It is likely that the placement of the posters in the level was a strong contributor towards this.

The government poster is featured in the cutscene and on walls in the starting area of the level, whereas the rebel poster is found further through the level down alley ways and on the wall of a building while there are many enemies around. It is likely that players spent more time focused on the gameplay itself rather than taking in their surroundings while there were many enemies in their vicinity. Some of the participants that recognised the posters from their playthrough admitted they only recognised the artefact but did not take in their meaning when briefly seeing them. The plot element of the rebel poster was understood by all participants when questioned in the interview regardless of their recollection, but the government poster had one participant not understand the plot element from it at all.

Reasoning for the successful plot element understanding of the rebel poster may be caused by the content of the poster. The rebel poster's use of the word 'Government' with a prohibition symbol over the top has heavily anti-government implications and was identified by several participants as the focal point of the poster and the reason for their understanding of 'Government vs Civilians'. The Government poster is possibly subtler, with the design stemming from historical World War II propaganda posters and features less obvious wording with 'The Government needs your cooperation'. One participant only had a partial understanding of the 'Government vs Civilian' plot element prior to being presented the artefact in the interview, but upon studying the poster they commented on the idea of the government trying to take control over the people and it was possible that this caused a rebellion of sorts. Another participant remarked that the poster looked like a wanted poster of the main character, however on closer inspection decided it was more likely to be propaganda from the government and deduced that the enemies in the level were in fact rebels and not government militia.

The success of the posters conveying 'Government vs Civilians' may be down to the nature of the interview. By taking the artefact out of the level and presenting it to the participant during the interview process gives the participant more time to deliberate its meaning and could be the reason that they are able to form better conclusions of the narrative context. Further, participants that showed only partial understanding of other fabula gained a stronger understanding of them when being prompted with the artefact, meaning that the artefact not only helped with comprehension of 'Government vs Civilians' but also the entire narrative.

Optional Dialogue Analysis

The start of the level features three different areas that trigger dialogue and the player is forced to experience at least one of these, depending on the path that they take. The least understood and recalled of these three were the 'GPD' and 'Single Body Government' plot elements and the most successful was the 'War duration' plot element. While the player must experience one of these areas, they are entirely free to experience all three. Only a single participant experienced more than one area triggered dialogue, finding a second.

It is possible that the 'War Duration' plot element resulted in stronger understanding as it is easier to comprehend when experiencing due to it being simple information in comparison to the 'GPD' and 'Single Body Government' elements. Even if the participant struggled to remember the exact dialogue used to explain the duration of the war, it seems that the information is easier to estimate than the description of the Government's involvement in the war. Further, due to the nature of the optional dialogue it could be interpreted that the conversations experienced in the area triggered dialogue hold little meaning to the participants and they are therefore less likely to retain the information than dialogue that might be impactful to their involvement in the game. This assumption can be backed up by the understanding shown of the 'characters' story element, where participants were asked to recall the role of the main character in the level and the relationship between the two main characters. These story elements were portrayed within the cutscene at the beginning of the level and all but one participant recalled and showed partial or greater understanding of the characters. It is possible participants paid more attention to this information in order to understand their surroundings and the part they play in the game. Once the participant is in the level and knows the goals set out for them it is possible that they may be less likely to retain narrative information that is presented. Additionally, it is likely that subtitles are harder to read during gameplay than in a cutscene and so a participant will not be able to pay as much attention to the area triggered dialogue. Two participants spoke about the use of voice acting instead of subtitles, claiming this would make it easier to pay attention to both gameplay and narrative at the same time. While this would have been an optimal solution, it was outside of the scope of the project.

Overheard conversations act as the second use of optional dialogue to portray the 'Rebels Winning' and 'Nuke Development' story elements. The 'Rebels Winning' element had 12 participants experience it, with 11 of them displaying recollection and at least partial understanding. There are several factors that could have influenced this success. Firstly, the level has been designed with this story element in mind, meaning there are multiple techniques portraying this narrative and thus make it easier for the participant to interpret it. In the interview, if a participant showed strong understanding of the story element 'Government vs Civilians' in the first question they were asked about the 'Rebels Winning' story element even if they did not experience the overheard conversation during their playthrough. One of the participants did not show any understanding of this story element at all, but the rest showed at least partial understanding or better, solidifying the idea that more than just the overheard conversation technique portrays this story element. Secondly, when participants were asked why they believed the rebels were winning, some explained that it was due to the play area being controlled by rebels and noted the clothes the enemies were wearing or by the cutscene as their reasoning. It is possible that this story element did not need to utilise the overheard conversation technique for it to be portrayed, but results showed that by having it included it strengthened the understanding for some participants for that particular story element.

The 'Nuke Development' overheard conversation only had 12.5% of participants experience it. This was likely due to the placement of this overheard conversation by an enemy blockade. The game is designed for players to stay away from enemies as well as using enemies at blockades to keep players within the designated bounds. It is likely that because of this, participants steered away from this blockade at the end of the level as they saw no need to visit that area of the map which appears to just be a dead-end. The three participants that did experience

this overheard conversation showed both partial and strong understanding of the story element. The recollection success rate of overheard conversations is a higher percentage than that of the area triggered dialogue. There are several factors as to why this may be the case. On observation, one participant stopped when coming across an overheard conversation and paid close attention to the dialogue, commenting about it being from new characters. As up until this point in the level the dialogue has been solely between the two main characters, it was a new experience for participants to see dialogue interchanged between two enemies. By drawing their attention, the player may have a stronger recollection of this event than one of the many lines of dialogue exchanged between the two main characters. Similarly, as all area triggered dialogue is located at the start of the level and both overheard conversations happen towards the end, it is possible that players may forget older narrative but have the newer overheard conversations fresh in their mind.

Cutscenes Analysis

While the cutscene at the beginning of the game has been discussed as effective alongside earlier techniques, the final technique of an in-game event did not prove very successful. Many participants thought that the use of the in-game event was part of gameplay rather than a part of the narrative. This is true to an extent as the event is designed to be coupled with the overheard conversation that explains the 'Rebels Winning' story element. While this element was understood well by participants, none gave the reason of the in-game event as to why they understood it. Furthermore, only 50% of participants experienced the overheard conversation which leaves the in-game event as simply part of the gameplay than an extension of the narrative.

Experience Analysis

The results of participants' experience within the level seem to show no correlation between enjoyment, focus or interest to explore and the understanding of the narrative. Similarly, there also appears to be no correlation with the amount of time taken for the participant to finish the level. The lack of correlation may be due to the shortness of the level. If the level were longer and each of the fabula were spread further throughout the level it is possible that more of a correlation could have been observed. For example, a participant may have had less desire to explore the level if it had been longer and consequently missed out several fabula, then causing them to have a lower understanding of the narrative.

Discussion of Results and Conclusions

Self-reflection

The created level managed to convey a story detailed with various plot elements through researched environmental techniques as specified in the aims and objectives. It had solid gameplay with stealth elements but the final product could be improved mechanically to offer an even greater gaming experience.

While the level produced fit the criteria to utilise environmental techniques it did not take long for participants to complete it. Levels in similar games take longer to complete while still maintaining a similar number of narrative techniques throughout however this did not seem to affect the narrative of the product negatively. Subtitles to present dialogue were not an optimal solution and normally video games would utilise voice actors to implement dialogue. Within the scope of the project acquiring voice actors was not possible, so the second optimal solution had to be chosen and was satisfactory for the project.

Results conclusions

No participant showed a full understanding of the narrative that was within the game. Similarly, no participant experienced all the narrative elements that were placed in the level on their play through. It can be expected that a participant may not fully understand the entire narrative if they have not experienced every element that was included in the level and parts of narrative can often be acceptably left to interpretation. As a large number of participants understood the major plot elements of the game it can be said that overall the story was understood, even if some finer details did not provide a similar level of understanding. This may be expected though as even in other media such as film or text people may not hold a full understanding of the entire narrative after exposure.

The most successful fabula was found to be the plot element 'War' being portrayed by the technique 'artefacts'. As all participants showed strong understanding of this plot element it indicates that the environmental technique is a strong way of conveying story. This is backed up by findings that show the most successful technique to portray plot elements was in fact artefacts, the plot elements that were presented by this technique all producing results in the participant having solid understanding. The most successful plot elements resulted in 'War', 'Setting', 'Time Setting' and 'War duration', despite what the techniques to portray them may have been.

While some fabula were less successful and the optional dialogue technique did not see as much success as other techniques, it is worth noting that it still received some success in certain fabula.

Future considerations

Future work could see the level lengthened, spreading out the use of each of the techniques and even presenting each plot element with different techniques in order to discover which technique portrays them the best. It may be found that while some information is not conveyed well with one technique it could produce better results being portrayed by another.

As the optional dialogue technique saw less success than the others, the use of voice acting would help strengthen the portrayal of the story element to players and then could produce a better result. Prospect improvements would see voice acted lines combined with the use of

subtitles as suggested by two participants in the study. Further, the script can be tested to discover the optimum way of delivering plot elements for full understanding for participants. Extra mechanics could add additional depth to the game which would enhance the overall experience, raising the quality of the produced level further.

Answering of proposed questions

With the project completed the questions this project poses can be answered, based on the results gathered from the evaluation.

- Can games tell story?

The results from the evaluation indicate yes. When asked in the interview "Do you think there is a story in this game?" every participant answered "Yes" and then followed up with a description of their perception of the narrative. While not every participant described the intended story they still believed there was a story.

- Can environmental techniques tell a story?

Participants' results show that the environmental techniques are successful for telling a story. Some techniques proved more effective than others however all can be credited with the ability to deliver narrative. Of the explored techniques artefacts resulted in being the most successful, nevertheless a range of techniques should always be considered when creating a solution to convey story.

References

Aarseth, E., 2012. A narrative theory of games, *Proceedings of the international conference on the foundations of digital Games* (pp. 129-133): ACM.

Atkins, B. and Krzywinska, T., 2007. *Videogame, player, text*. Manchester University Press.

Bizzocchi, J., Ben Lin, M. and Tanenbaum, J., 2011. Games, narrative and the design of interface. *International Journal of Arts and Technology*, 4 (4), 460-479.

Brand, J., 2005. The narrative and ludic nexus in computer games: diverse worlds II.

Carson, D., 2000. Environmental storytelling: Creating immersive 3D worlds using lessons learned from the theme park industry. *Gamasutra. com*, 1.

Denisova, A., Nordin, A. I. and Cairns, P., 2016. The convergence of player experience questionnaires, *Proceedings of the 2016 Annual Symposium on Computer-Human Interaction in Play* (pp. 33-37): ACM.

Dovey, J. and Kennedy, H. W., 2006. *Game cultures: Computer games as new media: computer games as new media*. McGraw-Hill Education (UK).

Dubbelman, T., 2011. Playing the hero: How games take the concept of storytelling from representation to presentation. *Journal of media practice*, 12 (2), 157-172.

Dubbelman, T., 2016. Narrative game mechanics, *International Conference on Interactive Digital Storytelling* (pp. 39-50): Springer.

Egenfeldt-Nielsen, S., Smith, J. H. and Tosca, S. P., 2013. *Understanding video games: The essential introduction*. Routledge.

Fullerton, T., 2008. *Game design workshop: a playcentric approach to creating innovative games*. CRC press.

Hargood, C., Artis, B. and Stevens, C., 2017. What's the Story? A Proposed Approach for the Evaluation of Experimental Interactive Narrative.

Hargood, C., Millard, D. E. and Weal, M. J., 2008. A thematic approach to emerging narrative structure, *Proceedings of the hypertext 2008 workshop on Collaboration and collective intelligence* (pp. 41-45): ACM.

Jenkins, H., 2004. Game design as narrative. *Computer*, 44, 53.

Juul, J., 1999. A clash between game and narrative. *Danish literature*.

Klevjer, R., 2014. Cut scenes.

Krainert, T., 2014. Storytelling Artifacts, *International Conference on Interactive Digital Storytelling* (pp. 113-124): Springer.

McGregor, G. L., 2007. Situations of Play: Patterns of Spatial Use in Videogames, *DiGRA Conference*.

Neitzel, B., 2005. Narrativity in computer games. *Handbook of computer game studies*, 227-245.

Nitsche, M., 2008. *Video game spaces: image, play, and structure in 3D worlds*. MIT Press.

Pinelle, D., Wong, N. and Stach, T., 2008. Heuristic evaluation for games: usability principles for video game design, *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (pp. 1453-1462): ACM.

Qin, H., Patrick Rau, P.-L. and Salvendy, G., 2009. Measuring player immersion in the computer game narrative. *Intl. Journal of Human–Computer Interaction*, 25 (2), 107-133.

Salen, K. and Zimmerman, E., 2004. *Rules of play: Game design fundamentals*. MIT press.

Simons, J., 2007. Narrative, games, and theory. *Game studies*, 7 (1), 1-21.

Sweetser, P. and Wyeth, P., 2005. GameFlow: a model for evaluating player enjoyment in games. *Computers in Entertainment (CIE)*, 3 (3), 3-3.

Totten, C. W., 2014. *An architectural approach to level design*. CRC Press.

Wei, H., 2010. Embedded narrative in game design, *Proceedings of the International Academic Conference on the Future of Game Design and Technology* (pp. 247-250): ACM.

Unity, 2018. *Unity - Manual: Making an Agent Patrol Between a Set of Points* [online] Unity Technologies. Available from: https://docs.unity3d.com/Manual/nav-AgentPatrol.html [Accessed 17 May 2018].

Jasper Stocker, (n.d.). *BuildR 2 - Procedural Building Generator* 2.17 [computer program]. (n.p.).

Invector, (n.d.). *Third Person Controller - Basic Locomotion Template* [computer program]. (n.p.).

Flagg, J., 1917. *I Want You* [poster]. United States: Leslie's Weekly. Catalog Number 1979.0600.06: The National Museum of American History.

Miller, J., 1943. *We Can Do It!* [poster]. United States: Westinghouse Electric.

(n.a.),(n.d.). *Big Brother Is Watching You* [poster].

(n.a.), 2011. *Egypt Uprising Power of the People Poster* [poster]. Popsicles and Grenades: Jorge Arrieta. Available from: http://www.popsiclesandgrenades.com/free-posters/egypt-uprising-power-of-the-people/ [Accessed 18 May 2018].

(n.a.), 2011. *Fight Back* [poster]. Guilty Novin: (n.p.). Available from: http://guity-novin.blogspot.co.uk/2012/08/chapter-60-posters-in-social-protests.html [Accessed 18 May 2018].

(n.a.), (n.d.). *Resist!* [poster]. Pintrest: Print Mag. Available from: https://www.pinterest.co.uk/pin/52354414398461720 [Accessed 18 May 2018]

West Ham Fan TV, 2017. *'If they don't pick their game up we're f**ked!!!' Crystal Palace 2 West Ham 2* [video, online]. Youtube. Available from: https://www.youtube.com/watch?v=TcgqhUpEkw0 [Accessed 18 May].

Google Maps, 2017. *S Plymouth Ct - Google Maps*, 1:20 [online map]. Google Maps: Google. Available from: https://www.google.co.uk/maps/place/S+Plymouth+Ct,+Chicago,+IL,+USA/@41.87022 34,-87.6288703,18.25z/data=!4m5!3m4!1s0x880e2c97554007e7:0xf7d9c00233a0c768!8m2! 3d41.8702216!4d-87.6285751 [Accessed 18 May 2018].

Guiness World Records, (n.d.). *First use of cutscenes to tell a story in a videogame | Guiness World Records* [online] (n.p.) Guiness World Records. Available from: http://www.guinnessworldrecords.com/world-records/first-use-of-cutscenes-to-tell-a-story-in-a-video-game/ [Accessed 18 May 2018].

Dev Assets, (n.d.). *Military Vehicles | Dev Assets* [online] Dev Assets: Brackeys. Available from: http://devassets.com/assets/military-vehicles/ [Accessed 18 May 2018].

Dev Assets, (n.d.). *Desert Environment | Dev Assets* [online] Dev Assets: Brackeys. Available from: http://devassets.com/assets/desert-environment/ [Accessed 18 May 2018].

Dev Assets, (n.d.). *Modern Weapons | Dev Assets* [online] Dev Assets: Brackeys. Available from: http://devassets.com/assets/modern-weapons/ [Accessed 18 May 2018].

Integrity Software & Games, (n.d.). *PBS Materials Variety Pack 2 - Asset Store* [online] Unity Asset Store: Integrity Software & Games. Available from: https://assetstore.unity.com/packages/2d/textures-materials/pbs-materials-variety-pack-2-40112 [Acessed 18 May 2018].

Unity Technologies, 2018. *Unity3D*. 2017.3.1f1 [computer program].

Adobe, 2018. *Adobe Fuse CC (Beta)*. Beta [computer program].

Appendices
Appendix A1: *Completed and approved Ethics Checklist*

Research Ethics Checklist

Reference Id	18223
Status	Approved
Date Approved	24/11/2017

Researcher Details

Name	Kylan Hendricksen
Faculty	Faculty of Science & Technology
Status	Undergraduate (BA, BSc)
Course	BSc Games Programming
Have you received external funding to support this research project?	No

Project Details

Title	Design & Evaluation of a Video Game Exploring Different Environmental Narrative Techniques
Proposed Start Date of Data Collection	09/04/2018
Proposed End Date of Project	13/05/2018
Supervisor	Charlie Hargood
Approver	Charlie Hargood

Summary - no more than 500 words (including detail on background methodology, sample, outcomes, etc.)

A video game level will be created using different environmental techniques. Participants will be asked to either play through the level or watch a video of the level being played. After they have played/watched the level, they will be given a questionnaire to fill out. Participants will partake in this study alone. The sample will be adults, both male and female from multiple backgrounds. These participants will be selected by approaching them personally and asking if they wish to take part in a study, participants will be approached in public areas such as the university. Around 20-25 participants can be expected. The data provided will determine whether the level successfully portrays a story and utilises environmental methods well. Examples of questions may include: "Do you feel this game included a story element?" "If yes, what do you believe was the theme of the story?" "Do you believe video games can portray stories?". The study will take place either at a place of the participant's choosing (if watching the video) or within a university lab. It will last around 25-30 minutes per participant with the level being 15 minutes and then 10 -15 minutes allocated for answering the questionnaire.

External Ethics Review

Does your research require external review through the NHS National Research Ethics Service (NRES) or through another external Ethics Committee?	No

Research Literature

Is your research solely literature based?	No

Human Participants

Will your research project involve interaction with human participants as primary sources of data (e.g. interview, observation, original survey)?	Yes
Does your research specifically involve participants who are considered vulnerable (i.e. children, those with cognitive impairment, those in unequal relationships—such as your own students, prison inmates, etc.)?	No
Does the study involve participants age 16 or over who are unable to give informed consent (i.e. people with learning disabilities)? NOTE: All research that falls under the auspices of the Mental Capacity Act 2005 must be reviewed by NHS NRES.	No
Will the study require the co-operation of a gatekeeper for initial access to the groups or individuals to be recruited? (i.e. students at school, members of self-help group, residents of Nursing home?)	No
Will it be necessary for participants to take part in your study without their knowledge and consent at the time (i.e. covert observation of people in non-public places)?	No
Will the study involve discussion of sensitive topics (i.e. sexual activity, drug use, criminal activity)?	No

Are drugs, placebos or other substances (i.e. food substances, vitamins) to be administered to the study participants or will the study involve invasive, intrusive or potentially harmful procedures of any kind?	No

Will tissue samples (including blood) be obtained from participants? Note: If the answer to this question is 'yes' you will need to be aware of obligations under the Human Tissue Act 2004.	No

Could your research induce psychological stress or anxiety, cause harm or have negative consequences for the participant or researcher (beyond the risks encountered in normal life)?	No
Will your research involve prolonged or repetitive testing?	No
Will the research involve the collection of audio materials?	No
Will your research involve the collection of photographic or video materials?	No
Will financial or other inducements (other than reasonable expenses and compensation for time) be offered to participants?	No

Please give a summary of the ethical issues and any action that will be taken to address these. Explain how you will obtain informed consent (and from whom) and how you will inform the participant about the research project (i.e. participant information sheet).
The standard informed consent form from the BU website will be used to gain consent from each participant. Personal data provided from participants will be age and gender, but no identifying information will be recorded.

Final Review

Will you have access to personal data that allows you to identify individuals OR access to confidential corporate or company data (that is not covered by confidentiality terms within an agreement or by a separate confidentiality agreement)?	No
Will your research involve experimentation on any of the following: animals, animal tissue, genetically modified organisms?	No
Will your research take place outside the UK (including any and all stages of research: collection, storage, analysis, etc.)?	No

Please use the below text box to highlight any other ethical concerns or risks that may arise during your research that have not been covered in this form.

Appendix B1: *Progress Gantt Chart*

Gantt Chart

Appendix C2: *Rebel Propaganda Poster*
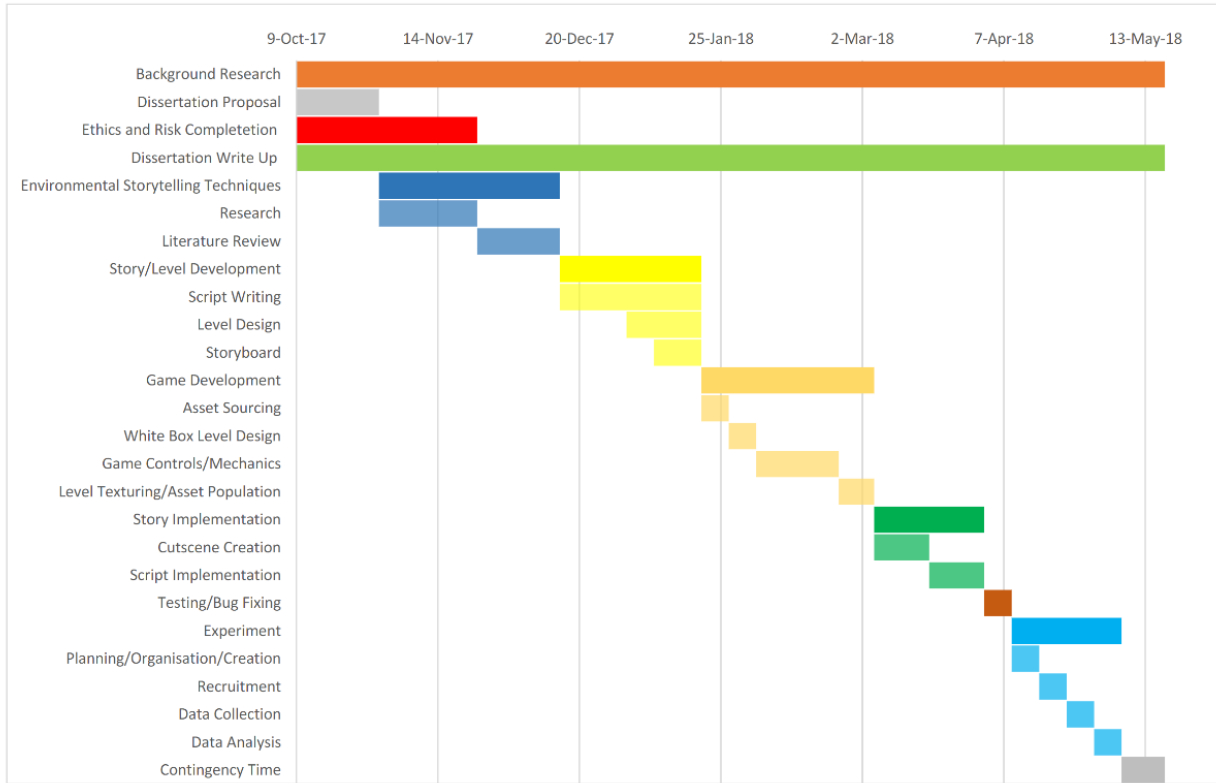
Appendix D1: *Consent Form*

Consent form

Study Title: Design & Evaluation of a Video Game Exploring Different Environmental Narrative Techniques

Name of the Researcher: Kylan Hendricksen

This form acts as confirmation of participation in the study and providing feedback. The study aims to collect feedback on player experience within a game level, the received feedback will then be analysed and used within this project.

I understand that my participation is voluntary and I am able to withdraw at any

time, with no obligation to give reason.

Participant's Initials:

I understand that any information given by me may be used and quoted within the project.

Participant's Initials:

I understand that any data gathered during the research will be stored according to the

regulations laid out in the Data Protection Act 1998.

Participant's Initials:

I understand that no personal information will be collecting during the study.

Participant's Initials:

I agree to participate in the above named study.

Participant's Initials:

Participant's Name:

Participant's Signature:

Date:

Researcher's Name: Kylan Hendricksen

Researcher's Signature:
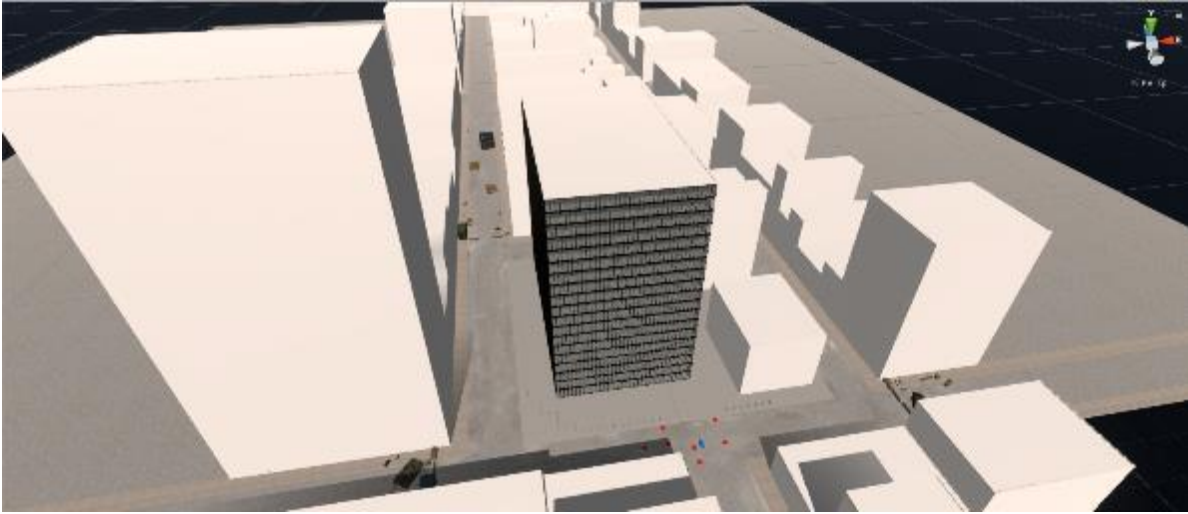
Date:

Appendix D2: *Questionnaire and Interview*

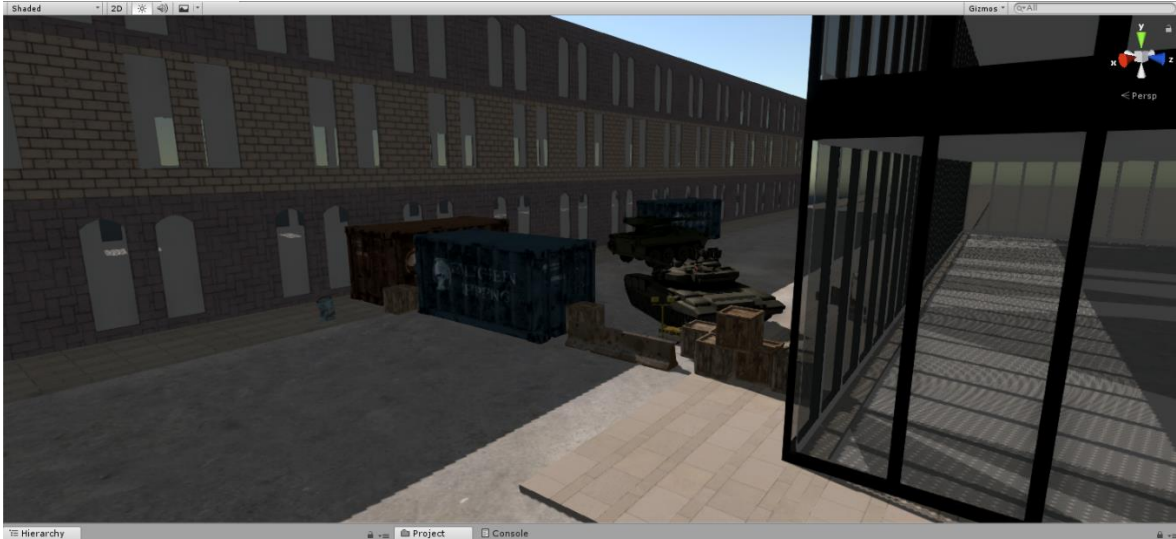| For the Participant	
Question 1	On average, how many hours do you play video games a week? (Circle one) • 0 Hours (I don't play games at all) • 0-5 Hours (I occasionally play games) • 6-10 Hours (I frequently play games) • More than 10 hours (I spend a lot of time playing games)
Question 2a	While playing the level, how focused did you feel on the game? (Mark on the line where you feel most represents your level of focus)
Question 2b	Based on your experience playing the level, how much did you enjoy the game? (Mark on the line where you feel most represents your level of enjoyment)
Question 2c	During your time playing the level, how curious were you to explore your environment? (Mark on the line where you feel most represents your desire to explore)

For the Interviewer	
Observations	Time taken:
Fabula	- War - Characters (Supporting/Main) - Time setting (2010- 2020) - Setting (Chicago/General Western World City) - Rebels - Government vs Civilians - Rebels Winning the War - Nuke Development - Single body Government - GPD - War duration (almost 3 years) - Factions
Question 3	Do you think there is a story in this game? & What is your perception of the story within this level?

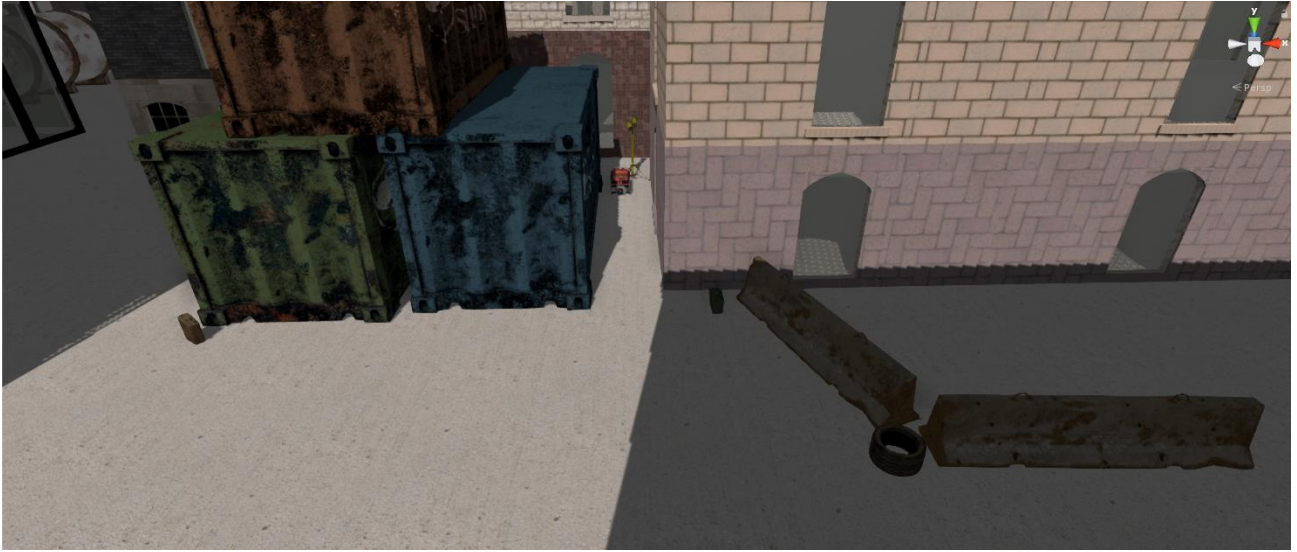|	
Question 4	(Ask various questions about the individual fabula that have been missed) Eg. Who is the conflict between? / Where when is the game set?
Question 5a	Present artefact: Do you recognise this artefact? / What do you think this artefact means in relation to the story?
Question 5b	Predetermined questions (See below):

Appendix E1: *Development screenshots*

Appendix E2: *Final Product Screenshots*

Appendix F1: Code Segments


```csharp
// Patrol.cs
using UnityEngine;
using System.Collections;


public class Patrol : MonoBehaviour {

    public Transform[] points;
    private int destPoint = 0;
    private UnityEngine.AI.NavMeshAgent agent;


    void Start () {
        agent = GetComponent<UnityEngine.AI.NavMeshAgent>();

        // Disabling auto-braking allows for continuous movement
        // between points (ie, the agent doesn't slow down as it
        // approaches a destination point).
        agent.autoBraking = false;

        GotoNextPoint();
    }


    void GotoNextPoint() {
        // Returns if no points have been set up
        if (points.Length == 0)
            return;

        // Set the agent to go to the currently selected destination.
        agent.destination = points[destPoint].position;

        // Choose the next point in the array as the destination,
        // cycling to the start if necessary.
        destPoint = (destPoint + 1) % points.Length;
    }


    void Update () {
        // Choose the next destination point when the agent gets
        // close to the current one.
        if (agent.remainingDistance < 0.5f)
            GotoNextPoint();
    }
}
```

```
 5
 6    public class Line
 7    {
 8        public string text;
 9        public float time;
10        public Color colour;
11    }
12
13    public class Subtitle
14    {
15        public List<Line> lines;
16
17
18    }
19
```

```
73            s1.lines.Add(S1L1);
74            s1.lines.Add(S1L2);
75            s1.lines.Add(S1L3);
76            s1.lines.Add(S1L4);
77            s1.lines.Add(S1L5);
78
79        }
80
81        void sub2Def()
82        {
83            //Story Subtitles Two
84            Line L1 = new Line();
85            L1.text = "Green: I remember this street- a friend lived down here.";
86            L1.time = 4f;
87            L1.colour = green;
88            Line L2 = new Line();
89            L2.text = "Yellow: This part of town used to be real nice, didn't it?";
90            L2.time = 4f;
91            L2.colour = yellow;
92            Line L3 = new Line();
93            L3.text = "Green: Very. Looks a bit different since I last saw it though.";
94            L3.time = 6f;
95            L3.colour = green;
96            Line L4 = new Line();
97            L4.text = "Yellow: It's crazy what over 2 years of war will do to a place. I bet that burning tank wasn't there before.";
98            L4.time = 6f;
99            L4.colour = yellow;
100           Line L5 = new Line();
101           L5.text = "Green: That would be a pretty safe bet to make.";
102           L5.time = 3f;
103           L5.colour = green;
104           s2 = new Subtitle();
105           s2.lines = new List<Line>();
106           s2.lines.Add(L1);
107           s2.lines.Add(L2);
108           s2.lines.Add(L3);
109           s2.lines.Add(L4);
110           s2.lines.Add(L5);
111       }
112
113       void sub3Def()
114       {
115           //Story Subtitles Three
116           Line L1 = new Line();
117           L1.text = "Yellow: This area is mostly controlled by rebels at the moment, so you wont come across many Government troops.";
118           L1.time = 6f;
119           L1.colour = yellow;
120           Line L2 = new Line();
121           L2.text = "Green: It's crazy how much a few groups of civilians have done in this war.";
122           L2.time = 4f;
123           L2.colour = green;
124           Line L3 = new Line();
125           L3.text = "Yellow:  If all the factions banded together they would easily finish taking back the city.";
126           L3.time = 5f;
127           L3.colour = yellow;
128           Line L4 = new Line();
129           L4.text = "Green: There's always going to be disagreements, even in a rebellion against your overbearing Government.";
130           L4.time = 6f;
131           L4.colour = green;
```

```csharp
void OnTriggerStay(Collider other)
{
    if(other.tag == "Player")
    {
        RaycastHit hit;
        Vector3 rayDirection = player.transform.position - this.transform.position;

        if((Vector3.Angle(rayDirection, this.transform.forward)) <= FOV * 0.5f)
        {
            if(Physics.Raycast(this.transform.position + transform.up, rayDirection, out hit, sphereCol.radius))
                if(hit.collider.gameObject == player)
                {
                    Debug.Log("Player sighted");
                    leway++;
                    if(leway > 10)
                    {
                        //pauseGame.pauseGame();
                        StartCoroutine(restartLevel());
                    }
                }
        }
    }
}

IEnumerator restartLevel()
{
    uiHandler.FadeIn();
    yield return new WaitForSeconds(2);
    Debug.Log("Line after fade in");
    Debug.Log("player pos = " + player.GetComponent<Checkpoints>().pos);
    player.transform.position = player.GetComponent<Checkpoints>().pos;
    //player.transform.rotation = player.GetComponent<Checkpoints>().rot.x;
    uiHandler.FadeOut();
    //yield return new WaitForSeconds(1);
    SceneManager.LoadScene("Level");
}
```

Appendix F2: Script Segments

```csharp
//Story Subtitles One
Line S1L1 = new Line();
S1L1.text = "Yellow: I called it. I knew it would end in this mess.";
S1L1.time = 3f;
S1L1.colour = yellow;
Line S1L2 = new Line();
S1L2.text = "Green: You did? You'll have to jog my memory.";
S1L2.time = 3f;
S1L2.colour = green;
Line S1L3 = new Line();
S1L3.text = "Yellow: Back when they changed to the singlebody Government- I said there would be war.";
S1L3.time = 5f;
S1L3.colour = yellow;
Line S1L4 = new Line();
S1L4.text = "Green: Huh, yeah. Plus making the GPD (Government Privatised Defence) and running the world like a dictatorship didn't help.";
S1L4.time = 6f;
S1L4.colour = green;
Line S1L5 = new Line();
S1L5.text = "Yellow: No need to remind me...";
S1L5.time = 2f;
S1L5.colour = yellow;
```

```
//Story Subtitles Two
Line L1 = new Line();
L1.text = "Green: I remember this street- a friend lived down here.";
L1.time = 4f;
L1.colour = green;
Line L2 = new Line();
L2.text = "Yellow: This part of town used to be real nice, didn't it?";
L2.time = 4f;
L2.colour = yellow;
Line L3 = new Line();
L3.text = "Green: Very. Looks a bit different since I last saw it though.";
L3.time = 6f;
L3.colour = green;
Line L4 = new Line();
L4.text = "Yellow: It's crazy what over 2 years of war will do to a place. I bet that burning tank wasn't there before.";
L4.time = 6f;
L4.colour = yellow;
Line L5 = new Line();
L5.text = "Green: That would be a pretty safe bet to make.";
L5.time = 3f;
L5.colour = green;
```

```
//Story Subtitles Three
Line L1 = new Line();
L1.text = "Yellow: This area is mostly controlled by rebels at the moment, so you wont come across many Government troops.";
L1.time = 6f;
L1.colour = yellow;
Line L2 = new Line();
L2.text = "Green: It's crazy how much a few groups of civilians have done in this war.";
L2.time = 4f;
L2.colour = green;
Line L3 = new Line();
L3.text = "Yellow:  If all the factions banded together they would easily finish taking back the city.";
L3.time = 5f;
L3.colour = yellow;
Line L4 = new Line();
L4.text = "Green: There's always going to be disagreements, even in a rebellion against your overbearing Government.";
L4.time = 6f;
L4.colour = green;
Line L5 = new Line();
L5.text = "Yellow: Us humans cant live without a conflict.";
L5.time = 3f;
L5.colour = yellow;
```

```
//Story Subtitles Four
Line L1 = new Line();
L1.text = "Rebel 1: ...and that's why they're moving East.";
L1.time = 3f;
L1.colour = red;
Line L2 = new Line();
L2.text = "Rebel 2: So how much longer do you think until the rebels have rid this city of Government scum?";
L2.time = 4f;
L2.colour = orange;
Line L3 = new Line();
L3.text = "Rebel 1: Not long now, they're on their last legs. I imagine they'll move resources back to NYC, they've got a better chance there.";
L3.time = 6f;
L3.colour = red;
Line L4 = new Line();
L4.text = "Rebel 2: It will be nice to get some normality back to our lives.";
L4.time = 3f;
L4.colour = orange;
```

```
void sub5Def()
{
    Line L1 = new Line();
    L1.text = "Yellow: Looks like a large group of Rebels coming your way.";
    L1.time = 3f;
    L1.colour = yellow;
    Line L2 = new Line();
    L2.text = "Yellow: You'll want to take some cover or duck down an alley, it's your call.";
    L2.time = 6f;
    L2.colour = yellow;
```

```
//Story Subtitles Six
Line L1 = new Line();
L1.text = "Rebel 1: ...think they would really use a nuke?";
L1.time = 4f;
L1.colour = red;
Line L2 = new Line();
L2.text = "Rebel 2: It's just rumours, but they haven't exactly been humane so far.";
L2.time = 4f;
L2.colour = orange;
Line L3 = new Line();
L3.text = "Rebel 1: I don't wanna believe they'd nuke their own people.";
L3.time = 3f;
L3.colour = red;
Line L4 = new Line();
L4.text = "Rebel 2: I wouldn't put it past them...";
L4.time = 3f;
L4.colour = orange;
```

```
void sub7Def()
{
    Line L1 = new Line();
    L1.text = "Yellow: Looks like you made it, let's see what the informant has to say.";
    L1.time = 4f;
    L1.colour = yellow;
```

```
void cutsceneSub()
{
    Line l0 = new Line();
    l0.text = "";
    l0.time = 3f;
    l0.colour = yellow;
    Line l1 = new Line();
    l1.text = "Yellow: You're now approaching rebel territory. We don't have any issues with these guys so it's a complete stealth mission.";
    l1.time = 7f;
    l1.colour = yellow;
    Line l2 = new Line();
    l2.text = "Yellow: If you get caught- that's it. They'll kill any outsiders on sight. So it would probably be best to avoid that.";
    l2.time = 6f;
    l2.colour = yellow;
    Line l3 = new Line();
    l3.text = "Yellow: You need to reach a building north of here, that's where the informant will meet us.";
    l3.time = 5f;
    l3.colour = yellow;
    Line l4 = new Line();
    l4.text = "Yellow: I doubt you'll be able to take a very direct route, so stay behind cover and I'll be here on the radio if you need to reach me.";
    l4.time = 6f;
    l4.colour = yellow;
```