

VIRTUAL ENVIRONMENT DESIGN
AND STORYTELLING IN VIDEO GAMES

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VIRTUAL ENVIRONMENT DESIGN
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ABSTRACT

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Video games have been the focus of discussion by researchers of gaming and narratology regarding their narrative capabilities for quite some time. While some researchers argue that interactive media such as video games can not contain narratives due to their inherent nature, others suggest that when analyzing video games as a narrative medium a different approach may also be considered. Given that the sequence of events that are presented to the user are not as ordered as they are in traditional narratives, it can be surmised that the traditional definition of narrative (a sequence of events) would not apply in the case of video games. However this should not mean that the medium can not contain narrative qualities, it only raises the need to a new approach for the consideration of narratives in video games.

In this thesis I suggest that instead of using the traditional narrative arc as a basis for evaluation for narratives in video games, one may also consider the indigenous qualities of the medium itself in terms of its narrative capabilities. Focusing on environment design in virtual worlds by examining how they are designed, authored and presented to the user; and how they are tied to the narrative design of a game, I aim to point out the ways in which game mise-en-scènes are used as storytellers in their own rights.

Keywords: virtual environments, game design, level design, narrative, video games

ÖZ

VIDEO OYUNLARINDA SANAL ORTAM TASARIMI VE HİKAYE ANLATIMI

Ekber Servet Ulaş

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Bilgisayar oyunları, anlatı ve oyun arařtırmacıları tarafından bir anlatı aracı olup olmadıkları konusunda uzun süredir tartışılmaktadır. Bazı arařtırmacılara göre, bilgisayar oyunları interaktif yapıları geređi anlatı taşıyamaz. Bazı arařtırmacılar ise, geleneksel anlatı tanımlarının dışında bir tanım ve kriterler ile bilgisayar oyunlarının anlatı bakımından deđerlendirilmesi gerektiđini düşünmektedir. Anlatı da deđerlendirilen olayların akıř sırası, geleneksel anlatı örneklerinde olduđundan ötürü, geleneksel anlatı tanımı (sıralı olaylar dizisi) bilgisayar oyunlarının anlatılarının deđerlendirilmesinde kullanılamamaktadır.

Ancak bu durum, bilgisayar oyunlarının anlatı içerebileceđi anlamına gelmemeli, etkileşimli mecralarda anlatının deđerlendirilmesi için yeni bir yaklaşım gerektiđini göstermelidir.

Tez çalışmamda geleneksel anlatı eğrisini kullanmaktansa, mecranın anlatı kapasitesini deđerlendirmek üzere, mecraya özgü niteliklerden faydalanılması gerektiđini önermekteyim. Bilgisayar oyunlarında mekan tasarımının, mizansen yaratarak basil başına nasıl bir anlatı öđesi olarak kullanılabileceđini vurgulamayı amaçlamaktayım.

Anahtar kelimeler: sanal ortamlar, oyun tasarımı, bölüm tasarımı, anlatı, bilgisayar oyunları

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CHAPTER 1.

NARRATIVE

1.1. Definition and Context of Narrative

According to Laure Ryan the term narrative has been overused to the point of abuse (2007:22); and this ambiguous state of definition is one of the reasons which causes the study of narrative a hard to build upon *métier*. Coupled with the problems that rise from interactivity and the appliance of the idea of a traditional narrative arc, this leads to a misleading focus when the context is game narratives (Bizzocchi,2006). This article focuses on the narrative qualities of video games. Thus, it would appear to be a necessity to define the term and its scope from the onset.

The misinterpretation that is born from the conflation of narrative and its partial synonym 'story' (Bizzocchi, 2006) is far less counterproductive than the vague definition of narrative itself. We should be focusing on how games are narratives and how narrative are they instead of debating if they are narratives or stories. As Laure Ryan states, the term narrative has been substituted and used for "belief," "value," "experience," "interpretation," "thought," "explanation," "representation," and "content" (2004:22) which is why it is easy to lose track and head towards an unproductive discourse when the subject matter is narrative. Even though the idea of a grand narrative arc is not applicable (at best) when it comes to interactive media, I believe it is necessary to establish a definition.

As it is not the aim of this study to build a new definition of narrative, it is much more useful to go over the previous definitions and make clear what they mean within the context of this article. Genette defines narrative as the representation of an event or of a sequence of events (1982:127). This definition considers events as the building blocks for narrative. Ricoeur adds the concept of temporality to the definition (1981:165) which leads us to a more involved concept. However, Laura Ryan argues that an ordered sequence of events does not necessarily have to be a story as it can also be a list of all the patients a doctor examines during a given day (2007:23). In our context, the relation between the events is what makes a narrative coherent. Brodie

quotes Barthes and suggests that narrative is a sequence of events and the structure manifests itself through the relations between an event and the event(s) that came before it and the ones that it is followed by (1979:75).

Thus, as far as the purposes of this study are concerned, the definition of narrative can be worded as a sequence of related events that structure a story. However, given that we are dealing with the world of video gaming, one should also always keep in mind the problem of interactivity and the concept of authored sequences, given that the whole point of interactivity is to give the user the means to manipulate such sequences. In his 2001 article 'Games Telling Stories?' Jesper Juul argues that one can not have interactivity and narrative at the same time since there is an inherent conflict between the now of the interaction and the prior of the narrative (Juul, 2001). I argue that, this does not mean that interactive media can not embody narratives; instead it may only mean that we should approach the analysis and study of interactive narratives from a different standpoint than we do with other media.

Chatman says that narrative is independent of its medium. He considers narrative as a type of text organization that needs to be realized - be it in written word as it is the case with stories or the movements of actors in a film (1981:117). Ryan also argues that if narrative is a discourse that conveys a story, its definition should focus on 'story;' and that as a concept, 'story' is something that materializes independently of the medium. From this it should follow that the definition of narrative should work differently for different media (2007:26). Following Ryan's argument Chatman believes that the transposability of the story shows us that narratives are indeed independent of their media (Chatman 1978:20). Therefore, one should keep in mind that not all media would bear the same narrative attributes with the same impact and effect. Adapting a story to different media makes the distinct powers of different media apparent (Chatman 1981:119).

If we are to talk about narratives and games, we may be well advised to first look into other media that are more established as narratives and have stood the trial of time for much longer than videogames. Our consideration in the context of this article should be focused on visual narratives, giving us an established base to build our ideas and analysis on.

1.2. Narrative in Images

Narrative through images has been in play throughout human history, going back to cave paintings. Neither linear or non-linear, images tell stories that need to be interpreted by the spectator. Will Eisner suggests that in order for an image to make sense to the spectator, its contents and subject matter have to be already known to the spectator – either as a memory or an idea (Eisner, 2008). The spectator perceives an image, which can either be the representations or the abstractions of objects that he/she is familiar with and interprets the information in whatever context they have been presented. McCloud supports that idea by emphasizing that pictures are received information and the spectator needs no formal education to interpret it on the other hand, writing is perceived information and it takes special vocabulary to decode the symbols of language (McCloud, 1994:49).

Where Western art is concerned, until the dawn of the Renaissance, it was usually common for paintings to depict and narrate scenes from Holy Scripture. Since the audience for such paintings were well-versed in the stories that are told in these sacred texts, the information could be read as part of a story, placing the spectator's gaze in a specific spatial and temporal point in narrative. During and after the Renaissance however, paintings became increasingly more secular and started to employ subjects of daily life and tales, creating a novel challenge in the conveyance of the narrative embedded into them, bearing in mind that still images are ultimately narratives constricted into a single shot. The meaning and the story behind the image is up to the audience to interpret based upon their experience, memories and cultural vocabulary.



Figure 1: View from the mural in Sistine Chapel by Michelangelo (1512)

The murals on Sistine Chapel's ceiling depicts scenes from holy scripture. There are nine scenes from the Book of Genesis. The narration is that God has created the world as a perfect place but humanity was tempted by sin and was punished by death and was separated from God. After the Great Flood, God sends Christ Jesus, as the savior.

These religious scenes and narratives were ideal decorations for churches and other holy places. It is to immerse the person in a story larger than her time. This narrative elements embedded into the environment, the place of worship surely sets the mood, the ambiance and the spiritual expectations of the receiver.



Figure 2: *The Swing* by Jean - Honoré Fragonard (ca.1767)

A good example for a painting that depicts a scene from daily life and not sculpture would be *The Swing* by Fragonard. The scene depicts an elderly man, presumably the woman's husband pushing her swing towards a younger man, the baron, unaware of his presence. The two cherubs below the swing seem concerned by what is going on, fully aware of everything and scowling away. On the left-hand side of the scene a cupid statue raises a finger over his lips to underline the secretive nature of the event.



Figure 3: Detail from *The Swing* showing the disapproval of the two cherubs

According to Emma Kafalenos, paintings compress the *sjuzhet*¹ into a single scene, leaving it to the spectator to unfold this shot into a plot, or *fabula*². (Kafalenos, E., 1996, cited in Ryan, L., 2004: p.140). When the spectator is presented with an image to be interpreted, the whole discourse of storytelling is encapsulated into a single scene and it is now the spectator's duty to build an order of events, a story from that. "A painting or photograph with narrative implications offers the perceiver an experience that is comparable to entering a narrative in *medias res*; we ask ourselves what has happened, what is about to occur, and where we are in the sequence of a narrative". (Kafalenos, E., 1996, cited in Ryan, L., 2004: p.140)

Another way of retelling a story through images is the use of dividing the image into frames. By dividing the story into frames, the author constructs a timeline to be interpreted by the audience's gaze. In Marie – Laure Ryan's words, this "segmentation restores some determinacy to the story line." (2004:141) .



Figure 4: A triptych by Lambert Lombard (1533)

¹ *Sjuzhet* is the order of presentation of events being retold in discourse time.

² *Fabula* is the chronological order of the events that are being retold.

1.3.Theme Rides

Theme rides, rather than images are more comparable to video games in terms of narrative since they introduce temporality to the experience. What is also relevant is that in theme rides, the author has total control over the user's experience: The user gets on the cart and the cart is driven through a path of authored content. The narrative qualities of such experiences can be said to be similar to the ones of reading a book or watching a film. There is however also a correlation with narrative through images since the designer of the ride uses the audience's assumed past experiences and memories to build a coherent story told by audiovisual elements, as is the case in Disney's amusement rides which build on the specific references to characters and events that inhabit Disney's storyworlds, with which it is to be assumed that the rider has an already existent relationship with, already knows who these characters are from previously read comics or watched films. We can observe the same approach in some video games in which the story takes place in an alternative timeline. A good example of this would be the Fallout³ series where we are presented with familiar surroundings such as the Washington Monument. The game's designers build dramatic impact based on the assumed relationship of the image with the player.

Nitsche suggests that theme rides are like video games in that they also create a sense of place as well as a context in a fictional world (Nitsche, 2008:13). Pearce also suggests that video games with the advent of 3D technology, resemble theme rides even more and can both be specified as "spatial media" (Pearce,1997 cited in Borries, Walz and Böttger, 2007:201). By creating a audio-visual environment to be navigated through by the spectator⁴ the amusement rides are certainly similar to video games. In fact, Virtua Cop⁵ features movement through the world quite similar to an amusement ride. The camera, which is the player's view of the world moves on a pre-defined path just like a cart would move on rails. The player in such games can stop the movement of the

³ Fallout 1 (Interplay Entertainment, 1997), Fallout 2 (Interplay Entertainment, 1998), Fallout 3(Bethesda Softworks, 2008), Fallout: New Vegas (Bethesda Softworks, 2010)

⁴ I believe it is appropriate to use the term spectator for most amusement rides since there is no interaction involved with the experience.

⁵ Sega, 1994

camera via pressing a footpedal, to take cover or reload her firearm, this adds -even if limited - interaction to a ride-on-rails movement system . Returning to Nitsche's suggestion that theme rides create a fictional world and a sense of place, theme rides also deliver a fictional world as a physical experience, presenting the spectator with a narrative experience even by the most traditional definitions of narrative.

With regards to the narrative attraction of theme rides, one might point out that “the physical exhilaration of the rollercoaster ride does not require any justification beyond itself” (Bolter, 2000:169), a statement which can equally be applied to the joy of playing a game purely for the sake of the mechanical interaction with the system. Koster explains this engagement with a game system by suggesting that the user is mastering a new skill, which might translate into Real Life as new learning. After the pattern of a game system is mastered the game stops teaching and it becomes less engaging therefore, boring as the player is not learning anything new (Koster, 2005:42).

CHAPTER 2.

INTERACTIVITY AND NARRATIVE

2.1.A Brief Definition of Play

Since our subject is video games, we should establish a definition of play as it relates to video games as well. Within this context Salen and Zimmerman define play as “a free movement within a more rigid structure” (2004:304). This rigid structure points to a rule-based system, which can be called the game’s system or the game’s mechanic. Salen argues that these rules provide both ends and means to a game, defining the winning conditions and what actions can be performed to achieve the winning condition. According to Koster, games are abstracted iconic representations of reality and the challenges in games are abstractions of real world problems (2005:34). To overcome these challenges, the player needs to analyze the pattern behind the challenge and come up with a solution. We master these patterns to beat the game. The free movement Salen and Zimmerman mention is free only within the scope defined by the game’s rules. Based upon this definition, we can define gameplay as, “certain actions taken by the player within a pre-defined set defined by a closed system of rules”, a closed-system of rules being the game’s mechanic and the actions that are allowed to be performed by the player being the player’s interaction with the game.

Murray defines this interaction as Agency. According to Murray, the more well realized an immersive environment is, the more the player will want to be active in it (1997:126). Not all actions can be considered meaningful agency, only actions that have meaningful consequences, actions that create tangible result can be considered to be so. Unlike participatory theatre, in video games players expect to be truly participatory since their choices and the actions that they perform need to change the game’s flow and outcome in some way. Murray argues that even though games like chess have a relatively lower frequency for interaction, the sense of agency the player has is greater because the consequences of actions taken are related to the player’s intentions. Lemmings⁶ would be a good example for low frequency of interaction and high agency.

⁶Psygnosis, 1991

The agents in the game (lemmings) are autonomous, the user sets them in motion to solve a certain environmental puzzle and seldom interacts with them. Even though the frequency of interaction is relatively low, the agency experienced is rather high because of the impact of the actions users take.

2.2.Interactivity

Focusing on interactivity, Crawford defines this state as “a cyclical process in which two actors alternatively listen, think and speak.”(2002:5). Nitsche rewords this process as “input-process-output” (2008:31). The input is what the player does, the process is the interpretation of the user’s actions by the system, according to the rules set by the game, and the output is the game's reaction to the user's action(s). This process, unlike reading a book or watching a moving image, has the user actively engaged in it. This does not mean that reading is inferior, it only means that the levels and methods of engagement are different in different media. On the contrary, Johnson suggests that reading has the readers use their cognitive capabilities on a different level where the user has to make sense of words, build worlds in her head and follow narrative threads (2005:23), giving reading a different set of merits.

Since narrative, as mentioned before, is a sequence of related events that structure a story, this sequence might not be realized when the retelling of the story also involves the user's participation: In video games the story progresses with the user's active participation. Thus, the pace of the story, and sometimes even the outcome might differ according to an individual user's engagement. This level of control that the user has is exactly the point ludologists emphasize as the salient factor that breaks the narrative in video games.

2.3.Interactivity and Narrative in Video Games

While analyzing traditional narratives, the traditional narrative arc is used. The traditional narrative arc consists of four stages: exposition, complication, climax and resolution. This approach may not be suitable for evaluating narratives in video games. Pearce offers to use the term narrative as an adjective rather than a noun when it comes to games and suggests focusing on the notion, “narrative operators”. Bizzocchi suggests that games should be analyzed within an analytical framework in which they should be evaluated on their narrative components such as their storyworlds, their narrative interface and their characters (Bizzocchi, 2006).

Ludologists and narratologists have been debating over whether video games are narratives or not for a considerable while now. Within this debate, Juul argues that building upon the definition of narrative (a sequence of events, recounted), and even having a plot does not make a narrative, and consequently games cannot be considered to be narratives (2004:36). Murray also realizes a problem with interactivity and narrative and suggests that the structures game are build upon can diminish the narrative qualities of them (1997:128). Offering a different approach I would like to suggest that Perhaps, we should be discussing how much of a narrative a particular game is instead of discussing if games can be considered a narrative at all, thus focusing on individual aspects of individual games, rather than making sweeping generalizations that encompass all of them. This focus would let us analyze an individual game by its discrete components in terms of narrativity.

Since interactivity takes a considerable amount of control away from the author and grants it to the user, this approach would also seem to be more productive, given that in different games, these hand over of control occurs in different ways and at different levels. Consequently, in most games, the ideal sequence of events that the author had envisioned and designed might not occur as wished, making the narrative in the interactive environment different than what might have been intended. Furthermore, this sequence will also change from user to user, since each individual will approach the game differently. Again, the level of such change of intended sequence will vary from game to game: While some games will allow far less control on behalf of the user,

others will be far more flexible – indeed with many games this hand over of control to the player will be paramount. This however, does not mean that in videogames interactivity and narratives can not work together: When we move past the debate of narrative versus interactivity, we can identify other elements of narrative value that can create a coherent narrative and form a story in the user's mind.(Bizzocchi, 2006)

CHAPTER 3.

ENVIRONMENTS AS NARRATIVES

3.1.Virtual Environments

According to Murray, one of the four properties of digital environments is spatiality⁷ (Murray, 1997). While traditional media can convey information that would represent an environment, only interactive, navigable spaces allow us to roam as we choose in these representations. The interactively navigable nature of space represented in digital environments sets it apart from the representations of space in other media by giving us a sense of being at a point in a particular space. Beyond this the virtual space that we are immersed into has further attributes that may aid narrative since very often the spaces that are found in virtual environments will respond to our input by displaying novel attributes or revealing hidden elements that unfold upon our actions inside them. The perception of events by the player is also different than other media. Murray suggests that while watching a dramatic performance in the theater the events are happening on a stage and you, as the spectator, merely watch – while in interactive navigable spaces there is a more dramatically engaging spectacle, you make the events in the virtual world happen and they happen to you. This gives the navigation a dramatic quality. (Murray 1997:129) Video games that fall within the scope of this article (those containing a narrative and are thus story-driven) almost always consist of environments which the users explore and unlock in tandem with the storyline. The user navigates through these authored environments in a fashion that can be said to be similar to the work modus of an archeologist, discovering plot elements that form a consistent history of the game-world. These environments are often populated with enemies, monsters, puzzles and other obstacles that the user must oppose and overcome within the rules defined by the game.

Manovich suggests that computer games while bringing to the fore entirely new aesthetic forms that need considerations in their own right, as a novel artistic genre,

⁷ Digital environment are in context of medium and not refer to spatial environments in this case.

adds that this new artistic medium gives rise to a new aesthetics of navigation as well (2001:213). Amongst the examples which Manovic gives are Doom⁸ in which the user is running through a maze-like level at a fast pace; and Myst⁹ which allows the user to explore the world around her at her own pace.

Manovich points out that these games place the user in a place in the story as well as in a spatial place, from the very onset of the game(2001:214). Thus, the user has to explore most of the game's environments before he/she can reach a narrative conclusion, since the game's goals are completed and the story is retold only by navigating through the 3D space efficiently (solving puzzles, defeating monsters, etc.); allowing for a rendering of the storyworld and the gameworld that is intertwined, the navigable space being the glue between the two, putting the user in the place of an archeologist, embroiled in actions that can be said to be similar to forming a coherent story from an excavation site.

As Murray defined earlier as a characteristic of digital environments, spatial navigation can be pleasurable in-itself regardless on the contents of the said environments and the mechanics of the game that contains them. Intentional navigation, is a participatory pleasure just like the sport of orienteering where people traverse an area based on clues such as landmarks.

Walz defines the labyrinth from the player's perspective as "bounded spaces to be traversed", their purpose being to delay the player from reaching the end goal (2010:190). He identifies two structures: Labyrinths and mazes. Labyrinths are unicursal and are for extending the distance between the starting point and the ending point of a path. The multicursal structure however, leads to a maze. The player is to guess which path to choose in order to reach the end goal. One important element of a multicursal structure is that, the dead-ends are incorporated in the structure as well.

Returning to Murray we find that the author identifies two different configurations for orienteering in electronic environments: The solvable maze and the tangled rhizome.

⁸ ID software, 1993

⁹ Cyan, 1993

The maze has a place in Greek mythology, particularly exemplified by Daedalus who builds King Minos of Crete a maze in order to contain the deadly Minotaur. The true hero of the story however is Theseus who slays the beast by successfully navigating the maze built by Daedalus. Murray comments upon this ancient allure of the maze as a story telling device by saying that:

“The adventure maze embodies a classic fairy-tale narrative of danger and salvation. Its lasting appeal as both story and a game pattern derives from the melding of a cognitive problem (finding the path) with an emotionally symbolic pattern (facing what is frightening and unknown.) ” (Murray, 1997:130).

The maze, Murray says, is a road map for telling this story, which is a structure that is not linear but instead shows branching attributes. The path needed to reach point B from point A might be more than one and sometimes one can even arrive at a point C which is just as acceptable as reaching point B. Therefore, considering that the maze is a multicursal¹⁰ structure, it can be assumed that the structure of a maze can apply to multi-linear narratives.

However, there also drawbacks to the maze structure, to which Murray points in the following way:

“it [the maze] moves the interactor toward a single solution, toward finding the way out. The desire for agency in digital environments makes us impatient when our options are so limited”(Murray, 1997:132).

However, if we consider the whole of the gameworld as a single maze, each node, each decision point the user makes can be considered as a different outcome.

In narratives, the linear labyrinth is a space where you can interact with other characters and objects and if need be, you can retrace your steps back to a point where you missed something, like Ariadne's thread¹¹. The path to be taken is decorated with encounters for the user to overcome and things to interact with. This linear path can be traced back by following Ariadne's thread back.

¹⁰Multicursal is a structure that has branches and dead ends.

¹¹ Ariadne's thread is what Theseus uses to navigate the maze where the Minotaur dwells in the Greek myth mentioned earlier.

Umberto Eco includes rhizomes as a third type of labyrinth. Rhizomes¹² are structures in which any point within the construct can be connected to any other point. This makes the stories that are embodied by these types of structures solutionless since a rhizomic structure has no end nor a beginning node. The player can not mark a node she has completed and can return to it later on, redoing all the actions required to complete the node over and over again. Since all nodes are connected to each other, the player may find herself in the same node many times during her experience. Thus, Murray suggests that the rhizome structure does not empower the user because of the fact that the user can not mark a lexia¹³ as read or mark a lexia so it can be accessed easily later in the reading process (1997:133). Aarseth also finds the inclusion of rhizomes into games as narrative or navigational devices inappropriate, pointing out that the inaccessibility of other nodes from the current node is broken within a rhizomatic structure (1997:6). Despite these argument against the rhizome structure when it comes to the user's power over navigation, Murray suggests that these unsolvable mazes do have a potential to serve as expressive structures:

“Walking through a rhizome one enacts a story of wandering, of being enticed in conflicting directions, of remaining always open to surprise, of feeling helpless to orient oneself or to find an exit, but the story is also oddly reassuring. In the rhizome, one is constantly threatened but also continuously enclosed. The fact that the plot will not resolve means that no irreparable loss will be suffered.” (Murray, 1997:133)

Murray differs games from stories since they place the user as the protagonist of the story and identifies a flow of plot that is embodied in game narratives. One of the points she identifies goes as: “I encounter a world in pieces and assemble it into a coherent whole.” (1997:142). By successfully navigating through the environment and traversing one level after another, the user assembles a world in pieces into a coherent whole. This is much like constructing a story in one's mind from the given plot points or an archeologist constructing a narrative from the artifacts she has found.

¹² “Rhizome” is used here as Deleuze defines it - “theory and research that allows for multiple, non-hierarchical entry and exit points in data representation and interpretation” ([http://en.wikipedia.org/wiki/Rhizome_\(philosophy\)](http://en.wikipedia.org/wiki/Rhizome_(philosophy)))

¹³ Barthes’ definition of lexia is a brief contiguous fragment – a reading unit.

3.2.Level Design in Video Games

When talking about environments in games, it may be in order to have a brief overview of the history of their environments and their presentation. One of the first games that uses spatial navigation is *Zork*¹⁴, which is a text-based game, meaning that there are no graphics in the game, instead everything in the gameworld is presented to the user via a text interface, as follows: “The gate is open; through it you can see a desolation, with a pile of mangled bodies in one corner. Thousands of voices, lamenting some hideous fate, can be heard. “The way through the gate is barred by evil spirits, who jeer at your attempts to pass.”¹⁵

```
Kitchen                               Score: 10   Moves: 37
>look inside the house
You can't look inside a white house.

>enter house
Kitchen
You are in the kitchen of the white house. A table seems to have been used
recently for the preparation of food. A passage leads to the west and a dark
staircase can be seen leading upward. A dark chimney leads down and to the
east is a small window which is open.
On the table is an elongated brown sack, smelling of hot peppers.
A bottle is sitting on the table.
The glass bottle contains:
  A quantity of water

>take bottle
Taken.

>look at sack
The brown sack is closed.

>open sack
Opening the brown sack reveals a lunch, and a clove of garlic.

>
```

Figure 5: A screenshot of *Zork – I* early in the game, after entering the white, colonial era house.

¹⁴Infocom, 1988

¹⁵ Taken from decompiled game code (<http://www.thezorklibrary.com/history/00-resources.html>)

```
Living Room                               Score: 10   Moves: 45
recently for the preparation of food. A passage leads to the west and a dark
staircase can be seen leading upward. A dark chimney leads down and to the
east is a small window which is open.
Sitting on the kitchen table is:
  A brown sack

>go west
Living Room
You are in the living room. There is a doorway to the east, a wooden door with
strange gothic lettering to the west, which appears to be nailed shut, a
trophy case, and a large oriental rug in the center of the room.
Above the trophy case hangs an elvish sword of great antiquity.
A battery-powered brass lantern is on the trophy case.

>read lettering
The engravings translate to "This space intentionally left blank."

>take sword
Taken.

>look at sword
There's nothing special about the sword.

>_
```

Figure 6: Next room in the house, the environment is described briefly, while interactable objects in the scene are described in detail, drawing attention.

Thus, the game describes what is around the player through textual output and the player interacts with the gameworld through these means. For the above excerpt, the player might input “talk to spirits” and in return the game outputs what has happened. Zork's environments are made of discrete rooms which the player navigates through with commands like “go south”, “go west”. Most people draw the rooms on paper while playing the game to organize the gameworld in a physical manner. Since Zork does not feature dialogue with NPCs¹⁶ the environment and its representation do all of the storytelling and give context to the encounters such as puzzles involving space, time and play (Montfort cited in Borries, Walz and Böttger, 2007:64).

With the advent of real-time computer graphics technology contemporary games no longer rely on text for representation, the player now actually sees the environment and hears the ambient sounds. This gives the games' authors a whole new set of tools: The representation no longer needs the player's imagination and his or her interpretation of an “old wooden door”, instead the authors can show the player how old the door is and it will be consistent within the minds of all players. It is now possible to create *mise-en-scènes* filled with detailed virtual objects whether for visual aesthetics or

¹⁶ Non Player Characters

narrative purposes.

I would like to clarify here that I use two different terms when talking about environments in a game: The first of these is the term 'stage' or a 'scene', with which I treat and approach the environment through its narrative qualities, much like a theatre stage. The second term which I employ is level, which identifies something that is to be traversed and that is designed to provide the appropriate challenges to the user as he/she progresses. Ideally, a level would bear both these qualities of traversing and of being challenged whilst doing so, brought about in an intertwined fashion in order to provide the most immersive experience.

Levels in a game serve as navigable spaces in a game that the player has to complete successfully in order to progress in the game. When a level is completed by the player, he/she is elevated to another level which holds a new challenge that is possibly defined under the same rules that make up the game. Therefore, level designers design the continuity of levels to form a coherent and sequential progress¹⁷ as well as taking into account the appropriate challenges within each level to create a level of flow¹⁸ that establishes the immersion.

When designing levels, the player often finds props and objects that break the suspension of disbelief - usually placed there for gameplay purposes. These items, while they help the player navigate the environment in a more successful manner, may also, in a certain sense be out of place. This type of displacement of items as a design strategy, if done sparingly might signal the player about what is to come; however if this tactic is used to excess it may cause dissonance (Byrne, 2005:62). A good example - because of their common appearance - would be ammunition boxes in action games, in which case the player finds ammunition boxes in places where none should exist. These resources serve the player's need to challenge the game's system but as a side effect, also break the reality of the story world while doing so. Objects that are meaningful from

¹⁷ A sequential progress within the game world where the end of a node is seamlessly connected to another's beginning.

¹⁸ Mihaly Csikszentmihalyi's definition of flow, the state of immersion one experiences when the challenge presented stretches the participants skills. In terms of game design, appropriate challenges must be presented to the player, a game must get harder as it progresses. (http://en.wikipedia.org/wiki/Mihaly_Csikszentmihalyi#Flow)

a narrative standpoint however, are not designed and placed in the game world to help the player beat the game. They are authored to create a more consistent gameworld. As an example, Alan Wake¹⁹ has the player in the shoes of a writer trapped in a fictional realm where he has to explore the areas he is in and find manuscript pages to reveal the story. While these manuscript pages are narrative elements, they are scattered in the game world in a way that does not necessarily make sense when they are first encountered due to their placement in the environment. In this case, the placement of these narrative elements does not cause dissonance, because of the game's already dreamlike setting however the ammunition and checkpoints signal what is to come and may cause dissonance while alerting the player about upcoming dangers. For a more sensible placement of ammunition (considered as a resource to help player beat the game) we should look at another game.

In Left 4 Dead 2²⁰, a multiplayer survival horror game, each level ends with the players locking themselves in a saferoom. The next level starts in the same saferoom with them being locked inside. When a player opens the saferoom door, the level starts. Before doing so, the players loot the safe room for ammunition, weapons and medicine. While the safe room is a sensible place to store these things and serves the player in providing items, it is also designed to be a narratively rich environment. The game world suggests that a city-wide evacuation has taken place and these saferooms have been used by many others prior to our players' visit. When in the saferoom, the players see notes and graffiti made by the previous survivors on the walls, some even bear notes to specific people and have signatures so you can track the progress of a certain previous survivor by reading the notes in consecutive rooms.

¹⁹ Remedy Entertainment, 2010

²⁰ Valve Corporation, 2009



Figure 7: A screenshot from Left 4 Dead 2, where we can see writings from other survivors on a wall.



Figure 8: A screenshot from Left 4 Dead 2, with inside jokes of the game universe's dwellers.

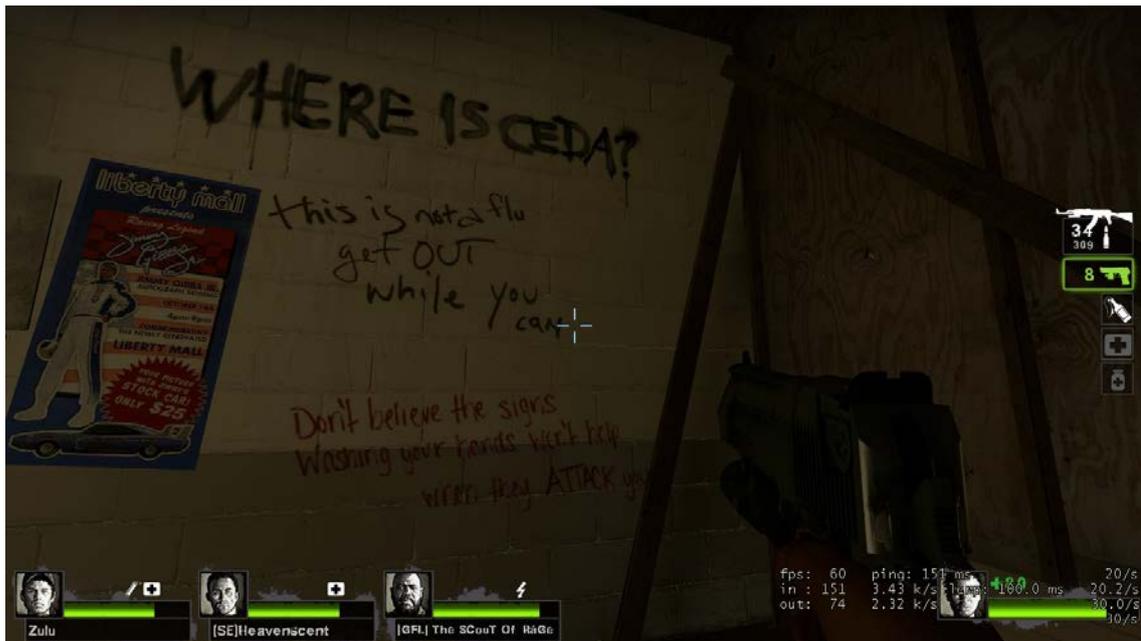


Figure 9: A screenshot from Left 4 Dead 2 in which we see an in-game term, "CEDA" as well as warnings from past visitors of the safe-room.

In his 2011 publication *Architecture as Teambuilding in Left 4 Dead 2*, Haselton investigates the design of the levels in Left 4 Dead 2, as their means of teambuilding between players (Haselton, "Architecture as Teambuilding in Left 4 Dead 2", *Well Played: A Journal on Video Games, Value and Meaning*:23) The levels are designed so that the players have to work in tandem to beat the game's system. While providing the players with environments that are narratively rich, Left 4 Dead 2 also features levels that are designed to help the players beat the game while causing minimal or no dissonance.

Another game, *L.A Noire*²¹, takes the notion of environment design even one step further, by creating an action game where the premise is that the player will be solving crimes by interrogating suspects and deciding whether they are telling the truth or not by their facial expressions during the interrogation. The game's environments, particularly the crime scenes have to be interpreted in a narrative context rather than as a level by the player to find and give meaning to clues. A face-down photo frame of a family portrait is no coincidence in a crime scene and is the key to taking the investigation further. The design of the living environments of the suspects tell more

²¹Rockstar Games, 2011

about the suspects than they do for themselves. This sort of environment design both serves narrative purposes and gives the player the needed resources to beat the game's mechanic in L.A Noire.

In Tequila Works' 2012 title Deadlight²², the user explores and discovers the environment the game takes place in and learns about the backstory as well as what her next task might be by investigating the setting around her.

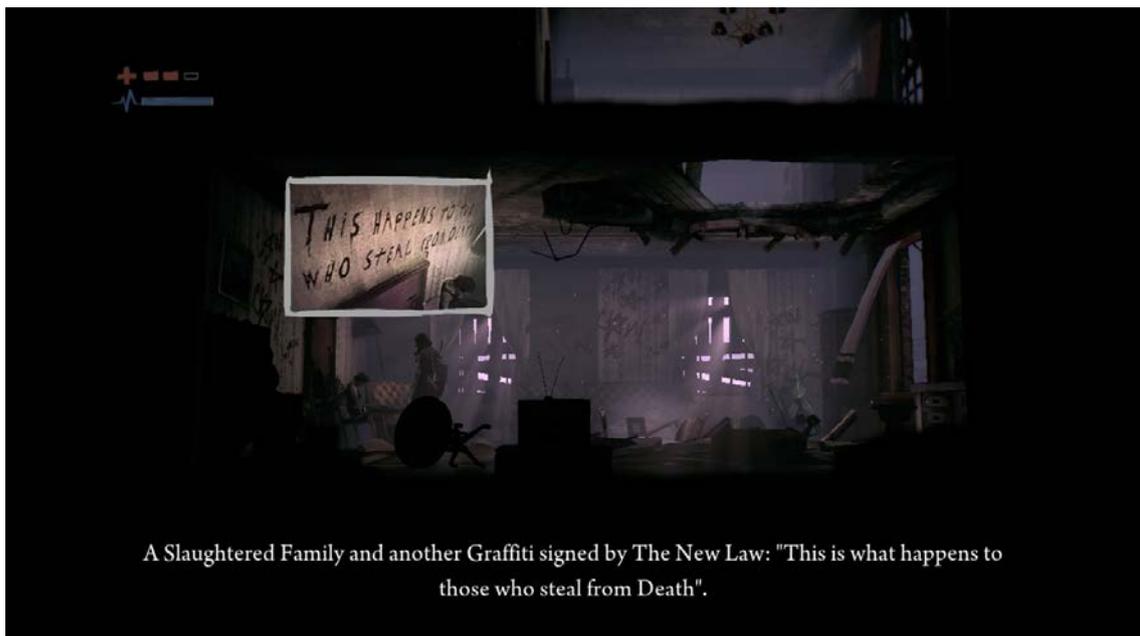


Figure 10: A screenshot from Deadlight where a detail is shown upon investigating a prop.

Clues are highlighted to draw attention and when interacted with, the user is presented with a detail shot of the object, as well as a subtitle of what the object is. This subtitle also establishes the player character's tone and opinions.

²²Tequila Works, 2012



Figure 11: A screenshot from Deadlight where a non-interactive prop with narrative elements is shown.

Some objects, even though the user can not interact with actively, carries story elements. These optional encounters do not carry key narrative meanings but they do tell details about the game universe. A closed circuit broadcast on a TV screen is a tool for the character to recall what has happened many months ago in game time.



Figure 12: A screenshot from Deadlight where we see a graffiti and presumably the author of it.

A graffiti on a household's wall gives the user an idea of what the dwellers believed in and hoped for and the subtitle gives the opinion of the player character's take on their ideas. We can safely say that a character's comments on an environment also helps establish the character and it's place in the game's universe.



Figure 13: A screenshot from Deadlight that shows a stylized visual language to depict past events.

The in-game jargon can also be set by the comments from the player character. The visual depiction of past events can have an exaggerated and stylized feel, giving the chapter a dream-like state, abstracting and dramatizing a narrative part. In Deadlight, the chapter shown in figure 13 does not bear any challenges gameplay-wise, it's mostly a rollercoaster ride designed to tell a story in a controlled pace and tone.

At this juncture, it is important to bear in mind that whilst adding a narrative value to a particular game level, we will also need to keep the level's function from the gameplay standpoint in mind as well. While we add evocative narrative elements to our scenes, we cannot take out elements that provide gameplay value out of the level, since although this might make our stage much richer in narrative, at the same time such an intervention might also make the level not as much fun or easily navigable. The balance between ease-of-play and conveying a story has to be weighed carefully.

Linear video games and the nature of navigation of these game worlds does not raise the problem that results from interactivity in narratives that nonlinear games do. In non linear games, the choice the user has in navigating environments in an order which he/she pleases creates the problem that many researchers have been highlighting, and that I have tried to review throughout this text, from different vantage points.

Open world games such as Skyrim²³ and Fallout 3²⁴ offer the user the ability to roam freely in the gameworld in an unordered fashion. Whereas in linear games the user would have to complete a level before he/she can continue to the next one, open world games are designed so that the levels are not ordered in a sequential fashion. Areas such as settlements or dungeons can be visited in any order the player wishes to do so. Nevertheless, these nonlinear²⁵ gameworlds still have a plot that is revealed as an ideal sequence, by means of the completion of certain quests in a particular order. Some objectives and the revelation of plot elements might thus be dependent on certain prerequisites. The player might be able to get to a point in the storyline only after doing certain things. When we add these prerequisites to each other, we achieve an order of tasks that reveal the story in an order. As an example, when the player visits settlement A, at first he/she might only be able to get quest AX (A for location, X for quest title); and only after completing AX, may he/she be able to get AY or even BX since a quest might lead to another quest in another location. Such a structure effectively leads to a linear gameplay and storyline if the user chooses to pursue only the main objectives by directing the user to locations in sequence.

It may seem that even though these locations can be discovered freely without any thread to follow, the narrative is constructed by following a certain, linear thread in the quest line. If the game system allows the user to complete the story related quests without assigning prerequisites, an extreme situation might lead the player to complete the last quest of the storyline where the main conflict is resolved before the conflict is even defined. In Fallout 3, the player can skip most of the quests and assuming that the player knows where to find his or her goal, by directly traveling to the location where

²³ Bethesda Softworks, 2011

²⁴ Bethesda Softworks, 2008

²⁵ Non linear, as in the world can be explored mostly in an unordered fashion

the objective is and thus complete the first chapter of the main story. While this does not necessarily break the main storyline, it potentially takes away a large portion of the backstory by letting the user skip parts. This might result in certain upcoming plot elements to be without any context since their references to prior events and locations have not been experienced by the player.

Such a quest structure, if embodied in the main storyline of the gameworld still allows for certain events to be experienced sequentially, as the author intended, providing a coherent narrative, while at the same time bringing about a considerable amount of freedom for non-linear content to develop.

CHAPTER 4.

THESIS PROJECT

4.1.Thesis Project Phase 1

4.1.1.Background

In my thesis project, I am building a traversable model that uses no narrative elements other than the design of the environment, the *mise-en-scène*. By designing an environment populated with objects that were designed and placed with their narrative importance in mind, I aim to communicate a story. I have tried to give no absolute clues to a certain way the event that needs to be interpreted by the user has taken place, the scene can carry the narrative of multiple stories depending on the perception and the interpretation of the user. With all the spatial nodes being unlocked from the start, the model provides a small scale model of a freely traversable open world. This, provides a sort of rhizomic structure which was mentioned before as an inappropriate model for narrative environments. At first glance, the environment structure that is featured in my thesis would differ from a rhizome by having a beginning and an end. However, the beginning and the end points are the same spatial points, which renders the linearity and sequential order of such concepts null. The beginning and the end is not only a spatial starting point and an exit point but a point in the storyline. The starting point would be considered the point where the player does not know what has happened in the environment and the end point would be the moment when the player builds the suggested story in her mind and has closure.

4.1.2. Visual Design Process

The design of the environment aims to depict a run-down motel room, which would give ideas about the motive of the crime. A sleazy motel scene evokes scenes of love affairs, drug deals and such secret events that have take place away from the public gaze.



Figure 14: A top-down rendering of the motel room that this thesis' project uses.

The figure above shows the layout of the motel room scene which my thesis project takes place in. We can easily see from the knocked down furniture and stains, a violent crime was committed here. It is up to the user to piece together why and how this crime was committed.

The perspective is from a first-person camera and the user starts from the door to the north, which is also the exit point of the application. The motel room depicted in the scene is a very small scale open-world environment, the user does not have any navigational sequence to follow through, each room and the clues it bear can and should be investigated freely and independently from the other.



Figure 15: A screenshot of the first frame of the thesis project's application.

It should be clear now that I am applying a rhizomic structure to both the environment and the story because the story is pieced together with the navigation, exploration and interpretation of the said environment. It is easy to imagine how spatial nodes can be interconnected but it is not easy nor it is straightforward how a story can bear such a structure. The perceived story is a linear one, but the discourse of the storytelling process does not have to be. We know that discourse-time and story-time can be independent of each other, building on that and taking it a step further, I propose that we can scatter narrative elements in a rhizomic structure where each element can be related to another but does not have to be as well.

According to Nietzsche, it is the designer's task to deliver the evocative narrative elements and up to the user to comprehend the given data and act accordingly (2008:229). While designing such evocative narrative elements and authoring them into the game world, I suggest that we must set some rules to achieve coherence between the space and the story.

a-Each object that has narrative meaning should be meaningful by itself. If we design narrative objects with that consideration in mind, the order of inspection of these objects would not matter. The user should be free to build a sequence based on her own interpretation after inspecting enough objects in a scene.

b- Narrative objects should be placed in the spatial world by their relation(s) to the environment and not to each other. Placing objects in a certain way according to their relations with each other would force the ideal sequence of events interpretation that we are trying to break away from as well as creating the risk of dissonance.

The user starts with motive to reveal a mystery which is presented to her as a crime scene. This is the entrance to the structure. Spatially, the gameworld is a rhizome but when the conclusion is made by the player on how the crime was accomplished, even though there is no spatial exit, there is closure thus, an exit in the narrative. No matter which node²⁶ is traversed in what order, a coherent story has to be built in the user's mind.

The model that was made within the scope of this project is a minimal application that has two nodes, which, I argue is the minimum amount of nodes a rhizome can have. The user starts to investigate a room in which a crime has taken place. There are no murder weapons or bodies to be found, only blood stains and furniture / props that are tipped over as mentioned before.

²⁶ A node in the spatial structure I am suggesting might be a room, a scene etc.



Figure 16: A screenshot that shows how lighting is used to guide the user to a clue.

I have designed the environment in such a manner that the lighting and depth of field directs the focus on these clues, but in no particular order. The above figure shows a blood stain on the bathroom wall. The attention is focused to the narrative element by the flickering light on the ceiling.



Figure 17: A screenshot that shows a bloodstain on the motel room's wall.

When the user is ready to leave the room, which means she has an idea of what has taken place in said environment, she goes to where she has begun investigating and clicks on the door, which also supports the idea of a rhizome having no beginning and end points by making this point a single spot in the game world.

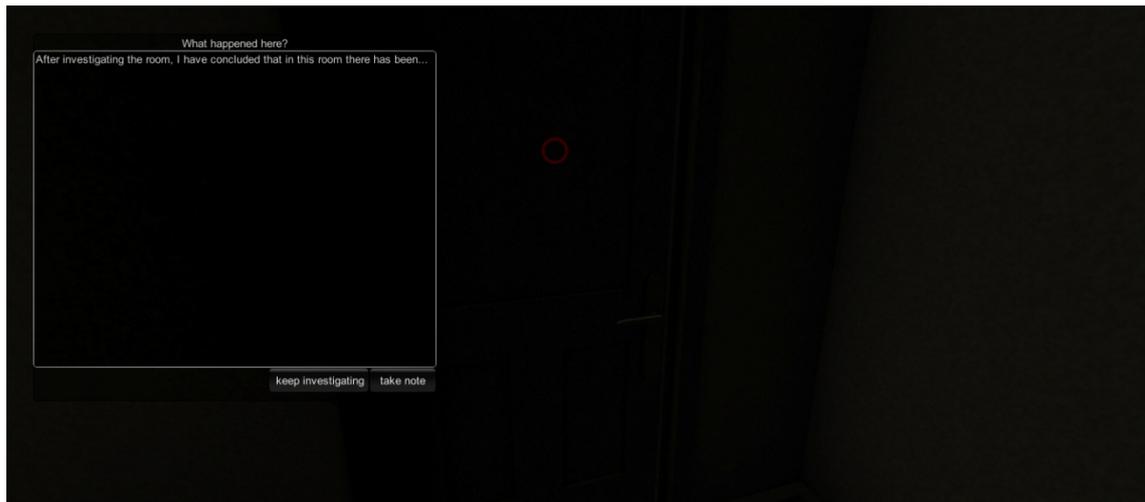


Figure 18: A screenshot of what happens when the user is ready to leave the room.

After clicking the door, the user is presented with a form where she can write what her opinion and concluded story is and submit it to a database I have created in my private server. These data can then be examined to see if there's a consensus on what has taken place in the scene.

If there is coherence between the stories, such as motive, means of execution and order of events, this, I argue would prove that a narrative can be established with only environment design in a non-linear, even rhizomic fashion.

Nitsche uses the term story maps for the player's perception of the game world in a narrative context shaped by the narrative evocative elements (2008:227). In my model, this story map is also an interconnected structure that does not require the user to interpret any information in any order, even though the information have a story-time²⁷, it does not have a discourse-time²⁸. Since the perceived physical map of the game world is an open one, the objects that contain narrative importance should be authored so as well. Exploration of such an open space with objects that bear meaning on their own as mentioned previously would help the designers achieve a more coherent world.

²⁷Story time refers to the order of the events being told.

²⁸Discourse time refers to the order of presentation of the events being told.

4.1.3 Technical Process

For this project, every object was first modeled in a 3D software and textured in a photo editing software. After the creation of 3D objects and the scene was complete, all textures were baked with ambient occlusion. This helped with setting the lighting and baking the shadows in the scene in a 3D design environment, which gives higher quality shadows and reflections than a real-time 3D game engine. This also helps with defining dark areas as well as lit areas without any realtime lights being active. A cool hue of light has been used in the room where the event started and a warmer hue is used where the final clue has been placed. This is to guide the user to the final clue(s) by means of guiding visual focus.

All the baked textures and respective objects are then imported into Unity3D game engine and lit again with real time lights. These real time lights, do not cast any shadows, which helps both with performance and is unnecessary since all the shadows that would be cast are already baked into textures. A template first person camera controller which is provided in the Unity3D engine is used for the navigation system and controls.

After the scene was completely interactive, I have opened a database and made an html form that sends what is entered in the form to a php script for parsing, which populates the mentioned database in my private server. The data that is being collected would then be studied to see if there is a consensus or if there has been common or similar findings through the clues presented to the participants.

4.2.Thesis Project Phase 2 - "What happened here?"

4.2.1.Background

After presenting the project, building on the feedback I have received from the jury members, I decided to revise the application as well as the method for evaluating the results. The jury members pointed out that a single story could be concluded from the environment I have designed and it would be more beneficial to design the environment in a way that it would allow a wide variety of interpretations.

This would mean that an environment can not only generate narrative but different stories can be interpreted by the user based on the objects placed in the environment. In the first version of the application, it a linear process for the user to interpret what happened in the environment even though one of the concerns was to have a rhizomic environment that can structure a rhizomic story.

Instead of having a motel room with basic furnishings, I decided to add a new layer of objects that are seemingly irrelevant to each other such as a fish in a toilet, a TV remote in a tub and a wooden toy horse in a closet. Now the user has to selectively tie these objects together in a coherent story.

4.2.2.Design and Authoring Process

Due to time constraints, I downloaded some free models from the internet and started to place them in my scene from phase 1. I paid special attention to the absurdity of these objects bearing in mind that they should not cause dissonance. All objects can be explained in regards to why they are there since they are representations of real life objects in a representation of a real world environment.



Figure 19: First frame of the application

The above figure shows the new, first frame screen of the application. The tipped over chair and the blood stains are removed to take out the guidance to a singular narrative in the environment. This also removes any suggested order of events if there were any. A gun and a blood splatter would suggest that first the gun took off and then there was blood. By removing the relation between any of the two visual narrative elements, I aim to create a truly rhizomatic environment.



Figure 20: Investigating an object

Objects in the scene, particularly objects that are small can be investigated individually. A guitar would not need investigating since its world-size is enough to bear any detail it might need to have narrative meaning. A coin on the other hand, would need to be examined closely to have narrative value – it being a Danish coin or a Turkish Lira would mean worlds of difference.

Examining objects also take them out of the environment for a moment, letting the user effectively zoom in and focus to the said object and view it independently from its environment and any context that might be attached to it because of the environment.



Figure 21: Small objects such as the matchbox and crumpled up paper needs examining.

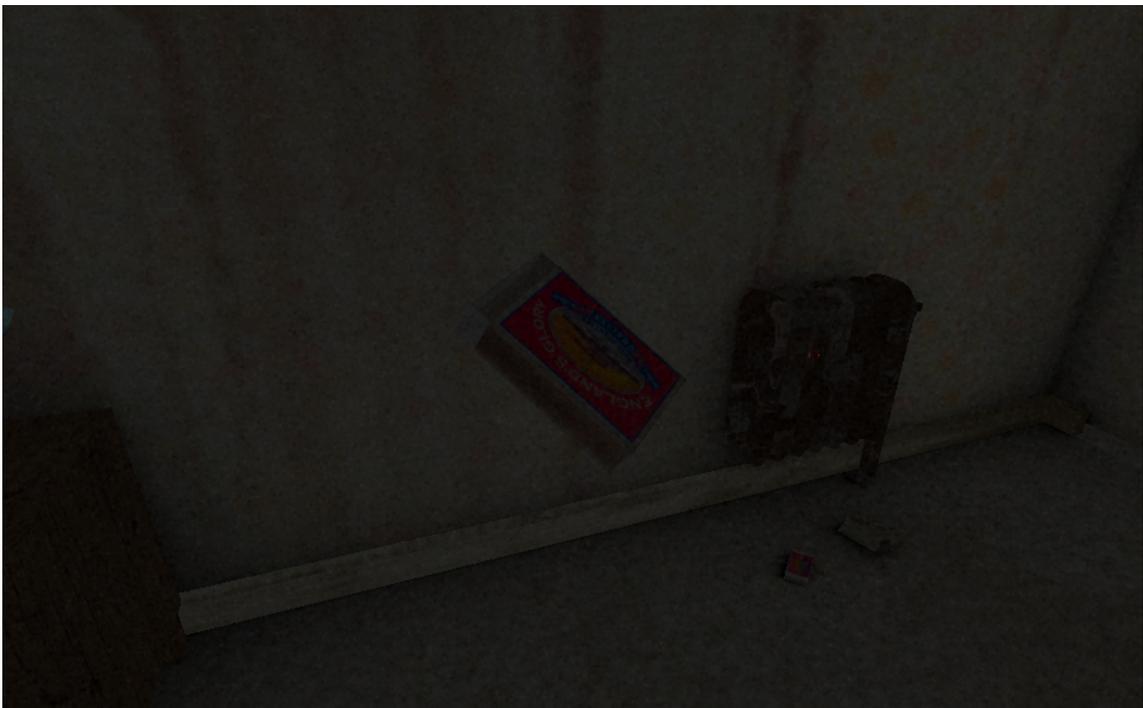


Figure 22: When examined the matchbox is found to be empty.

I paid deliberate attention to objects that have no relation to each other and to where they are placed in the world. A fish in a toilet bowl suggests no scenario that makes sense, and consequently forces the participant to come up with her own story based on her interpretation.

As I have previously stated in Chapter 4.2, each object that has narrative meaning should be meaningful by itself. If we design narrative objects with that consideration in mind, the order of inspection of these objects would not matter. The user should be free to build a sequence based on her own interpretation after inspecting enough objects in a scene. In this application, the objects are meaningful by themselves in a way that they are meaningless.

Also suggested in Chapter 4.2, narrative objects should be placed in the spatial world by their relation(s) to the environment and not to each other. Placing objects in a certain way according to their relations with each other would force the ideal sequence of events interpretation that we are trying to break away from as well as creating the risk of dissonance. In the final version of the application, I went further and broke any possible understanding of relation by placing these objects in places that they should not be. Just like the meaningless of objects by relations with each other, I try to break any associations with the environment as well.



Figure 23: Above the image shows a fish in a toilet bowl

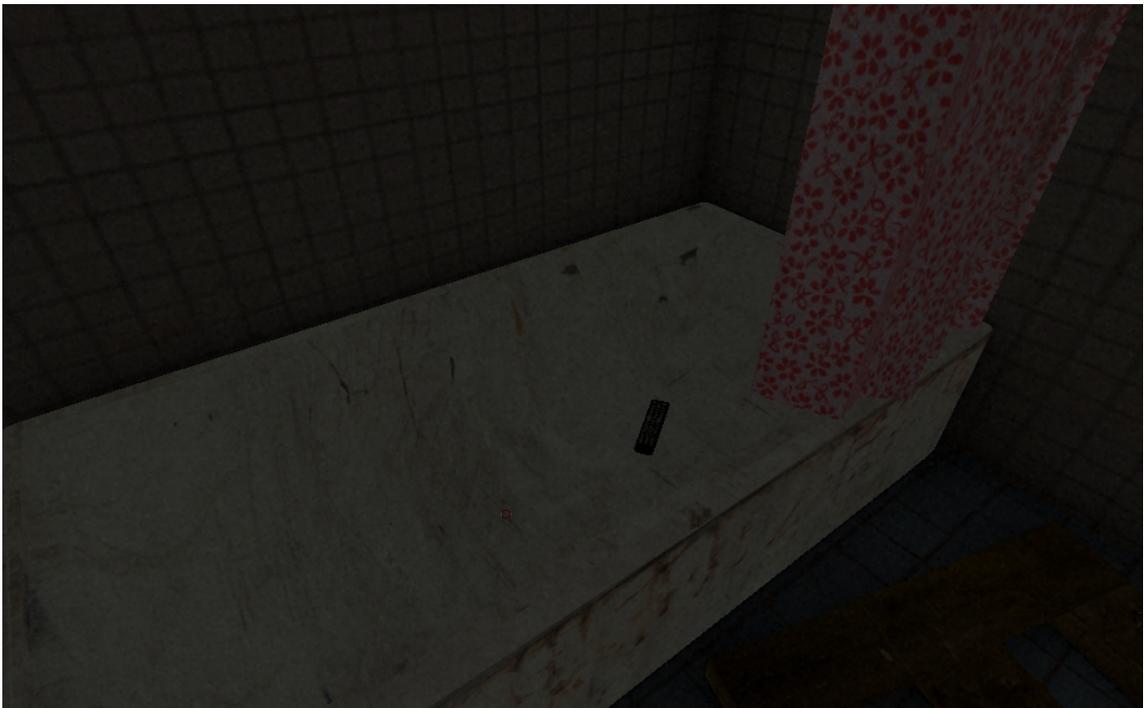


Figure 24: Above the image shows a TV remote in a bathtub

4.2.3. Compilation of Survey Results

During the 10 days the project has been online, over 20 participants have submitted the stories they have written to my database. The stories' themes vary from crime to relationship problems to orgies involving fish. Since there was an expectation of a story, the participants did manage to tie almost all of the objects in a coherent story, giving context to each object.

The following example depicts multiple characters involved, their relation to each other, as well as the objects involved in the story leaving some of the objects entirely out of the picture.

“There was a couple. The guy was a repairman. He needed to leave town for business purposes for the weekend. So he and the girlfriend used the opportunity and turned this into a short break. Since they were short of money, the only place which they could afford was this motel.

They were going to have a picnic, grill fishes, play some music, enjoy themselves. But for some reason they have gotten into a fight and checked out.”

The stories produced range from absurd to extremely absurd, all having one thing in common: wild, imaginative scenarios. When the users were left alone without any guidance to structure a story, they came up with highly non-sensical stories yet they were all trying to make sense of the objects in the room which I found extremely ironic.

Previously, I have stated that a rhizomic structure has been found to be inefficient for storytelling purposes by Murray and Aarseth. This smallest scale of a rhizomic environment and story model shows that it is indeed inefficient for narrating a singular story but it is efficient when it is evaluated as a story-making playground.

It is also noteworthy that the stories produced by the participants have a structure to which the traditional narrative arc can be applied. Some entries in particular can be read as a traditional narrative, given that the participant has provided a clear exposition, complication, climax and resolution.

While it not considered ideal to use the traditional narrative arc on an interactive story, especially when it is presented in a rhizomic fashion, it is surprising to see that it may apply in some outcomes, depending entirely on the user's need to clarify plot elements. If a participant has seen that it was necessary to come up with some backstory, the participant ends up defining what lead to what, making causal relationships between objects and events as well as temporal ones.

CHAPTER 5:

CONCLUSION

The application of the project is built upon an environment that involves objects that are irrelevant to each other. It would seem that the application is contradictory to the thesis of this study. However, it is evidence that a completely rhizomic structure (or non-structure) of objects can still generate a story. This of course applies to environments such as Second Life and other sandboxes which such authored environments are not only possible but common and expected.

This thesis also applies to digital games. Games having rules should not mean that the narrative meaning of the medium would suffer from user authored stories generated from designer authored environments. A non-linear, interactive medium such as games, not only can bear narrative qualities, it has its own arsenal for telling a story. In this study, I suggested that environment design alone can tell a story. Also using the most navigationally non-linear and chaotic structure for storytelling, a rhizome, I tried to establish that a story can be told independent of medium and without having a preset sequence. Not only that, an environment can drive the user to create their own stories without any textual clues.

This non-traditional narrative medium has its advantages for storytelling and narrative as well as the disadvantages which researchers have been pointing out. It is the designer's duty to be aware of the disadvantages and use the advantages to their full extent to create emotional, profound experiences for the user. I argue that a story created by the user in an authored environment (by the designer) would lead to a much more convincing story world since the justification of each element is made by the user herself.

Above all, visual designers and artists should approach every problem problem in the digital realm as it was a real world design problem. By using what we have learned over the years about color, lighting, focus and composition, we can direct the user's gaze, thus the story. When designing and authoring an environment for the user to traverse, we can simplify the problem into a visual design one and solve it as such.

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