Dear Diary | An Investigation of Emotionally Engaging Computer-game Narratives

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Exegesis

Attestation of Authorship

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.

Hengbo Wang

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Abstract

Beginning with an analysis of design principles utilised in the computer-game medium in relation to its interactive nature as well as other storytelling disciplines, this project aims to investigate how emotional narrative experiences can be crafted through effective game design.

Through examination of successful examples of computer-game storytelling, hypotheses relating to meaningful play, emotional engagement and effective narrative techniques are formed and refined.

In parallel to the theoretical research, an iterative series of design frameworks are progressively developed – accumulating in an interactive prototype demonstrating key findings in assistance of game narrative design practices.

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1. Introduction

1.1 Exegesis Breakdown

This exegesis is comprised of five sections:

Introduction – an overview of the observations and personal experiences motivating the research and outlines the project's main focus.

Research and Design Methodology – a breakdown of the methodology by which the project's research and design was undertaken.

Concept and Contexts – a theoretical investigation of narrative and gameplay as systems of meaning, forming the contextual foundation for *Dear Diary*.

Analysis of Games – an examination of established ludo-narrative mechanics and case studies of independent game development techniques relevant to the design and creative direction of *Dear Diary*.

Practical Component – explains the concepts and creative process behind a series of iterative designs leading up to development of *Dear Diary*'s final outcome.

References – a comprehensive account of all texts, games, images and other media referenced throughout the exegesis.

1.2 Research Overview

The modern computer-game has evolved beyond the days of *Pong* (Alcorn, 1972) and *Pac-Man* (Namco, 1980). Modern computer-games are not only capable of provide "endorphic moments" (Morris, 2012) of entertainment but also engaging emotional narrative experiences.

The release of *Grand Theft Auto 5* on September 17th, 2013 saw a computer-game not only breaking industry records but becoming "the world's most successful release across all of entertainment" (Eric, 2013). Along with computer-game's growing influence on mainstream culture, we have also seen a growth in its potential as a medium for artistic expression and storytelling.

Despite "a good story" being a key component of many critically acclaimed computer-games, many believe "the nature of their interactivity raises the question of their potential to do this effectively" (Parker, 2009). This conflict stems from the fact that unlike traditional passive mediums, computer-games require players and games to work together to create a narrative experience.

What makes this interactive medium different from others? Over the years many critics, designers, and players have continued to ask themselves and each other the question – "How do you design a 'good' computer-game story"? Is it a matter of pursuing more meaningful subject matters outside of current conventions? Or do we need to explore storytelling in games from a different perspective? Crucially, are there effective practices that can be applied to the game design process to craft meaningful narratives as well as gameplay?

With the advent of digital distribution and crowdfunding, the medium has also seen the experimentation of avant-garde game design philosophies from many independent game developers. Many indie titles have seen great acclaim due to diversity in gameplay and "richer narrative experiences" (Andrew, 2014). Does a difference in scale have an effect on a game's ludo-narrative design process? How does their storytelling methodologies differ to more established computer-game franchises and could they be more effective?

1.3 Research Questions

The main focus of this research project lies in computer-game narratives - how they are formed, shaped and how they convey emotional experiences.

> *What are the key components of an immersive computer-game experience and how does this create meaningful narrative outcomes for the player?*

> *How can computer-games be used as a storytelling medium to evoke emotional engagement?*

> *What is the game designer's role in creating narrative in computer-games and under the framework of independent games development, what are the key principles and techniques to crafting meaningful interactive storytelling experiences?*

As ***gameplay*** or more specifically the concept of ***play*** has a significant contribution to a computer '***game'***, mechanical components of a computer-game experience cannot and will not be avoided in the research process. However, the as indicated by the research questions, the project shall primarily look closely at how game ***mechanics***, ***systems*** and ***design*** in the context of *narrative outcomes* as a result of *gameplay experiences*.

1.4 Thesis Overview

The thesis project contains three key components:

1. Research in to key concepts and contexts around the relationship between computer-games and narrative,
2. Investigation of successful narrative experiences in game genres and indie games and game-design/ prototyping as a response to learnings,
3. The practical iterative design and implementation process leading up to the development of ***Dear Diary***, an interactive computer-game narrative experience as a final prototype of research findings.

The practical component explores several narrative themes including *memories*, *inner-voice*, and the *physical/ emotional distances between people* within a computer-game fictional narrative framework. The prototype is designed to be a platform to test theories and ideas explored in this exegesis.

2. Research and Design Methodology

Prior to the beginning of this project, my experience with computer game narrative was primarily based on a gamer/ audience's point of view. Taking this into account, ***Dear Diary***'s research and design methodology was undertaken as three key components:

1. Literature Review:

   Research into key theoretical concepts and contexts around the relationship between computer-games and narrative,

2. Analysis of Games:

   Analysis of popular narrative mechanics and case studies of modern indie game ludo-narrative design,

3. Iterative Design and Prototyping:
   Experimentation and prototyping of game systems, designs and mechanics in response to learnings and case studies.

2.1 Literature Review

Over the years, there has been growing focus on the role of narrative in computer games and its potential as a storytelling medium.

Dear Diary's academic and theoretical groundwork is predominately based on the following key areas of existing concepts and contexts:

2.1.1 Story vs Narrative

Commonly, when discussing 'story' in computer games, emphasis is placed upon *author-driven* examples of game narrative. Often the "storyline" of a game is used to provide context for the gameplay: i.e. in the *Call of Duty* (Infinity Ward, 2003) series new challenges are introduced via new levels contextualised as military missions. Other times, they are used as a reward to support and motivate progression, often in the form of video cut-scenes. *Metal Gear Solid 4: Guns of the Patriots* (Kojima Productions, 2008) holds the world record for a 27 minute long non-interactive cut-scene segment, yet the series is frequently lauded as boasting one of the "greatest

[computer] game story ever told"(Gary A. Swaby, 2009). The very cinematic film-like story segments themselves play a vital role for players to progress through the gameplay.

However, there is a distinct difference between *Story*, and *Narrative*. In *The Media Student's Book,* Branston and Stafford defines *Narrative* as:

> *A sequence of events organised into a story with a particular structure.*

Whereas a Story as:

> *All of the events in a narrative, those presented directly to an audience and those which might be inferred.*

Regardless of the medium, these definitions help to clarify the fundamental difference between the two subjects. In traditional storytelling mediums, a narrative structure is made up of frameworks such as characters, plot, setting, themes and presented in linear or non-linear fashions. However, in games, these frameworks also operate within a system, alongside *gameplay mechanics*. The commonly discussed topic of game *stories* is just one component of the ever expanding nature of computer games as a storytelling medium. Thus, ***Dear Diary***'s literary and academic research will focus on the subject of *Narrative* in computer games. Namely – the relationship between narrative and gameplay, design of computer game narrative structures and how stories/ events/ experiences are communicated to the player.

2.1.2 Ludology and Narratology

To initiate this research in the most holistic manner, I must first acknowledge the historical theoretical and academic context in relation to narrative and games.

Prior to the arrival of computer-games, games were mainly studied from an *anthropological* or *historical* point of view (Veugen, 2011). However, as the study of computer games evolved into its own field, a segregation has taken place in the form of the so-called "ludology vs. narratology" debate.

In the initial years of games research, its relationship with narrative was often "appropriated by literature and film studies". *Narratologists* firmly believed that computer games were a form of narrative: "Games are always stories" (Murray, 2004, p.2) whereas *Ludologists* viewed games as strictly rule-based systems of play: "…the computer game is simply not a narrative medium" (Juul, 1999, p. 1)[1].

This project agrees with more recent conclusions from theorists such as Espen Aarseth (2012) that this debate largely stemmed from misconceptions about key narrative and game concepts, and often "unnuanced, untenable, and therefore unproductive" (Aarseth, 2012).

Concurring with Aarseth, it must be noted that modern computer-*games* are "not simply games, but complex software programs that can emulate any medium, including film, text/novel, graphic novel, and, for that matter, simulate board games and sports" (Aarseth, 2012). They are hybrids, amalgams, complex systems for communication that contain stories, among many other things.

[1] A position Juul would later retract in *Games telling stories?* (2001)

Thus, this research shall adopt a "ludo-narratological" (Aarseth, 2012) non-polarised approach, to reflect the diverse nature of storytelling found in the computer-game *design space*. I aim to investigate not simply the *story* of games, but rather the complete *narrative experience*. Ludology concerns such as game *systems*, *rules* and *mechanics*, will also be addressed - but in respect to their potential to produce *narrative play*.

2.2 Analysis of Games

This component will consist of two sections:

1. An investigation of successful narrative mechanics found in established genres and,

2. Case studies of modern narrative experiences found in *indie games*[2]

2.2.1 Ludo-narrative Mechanics and Game Genres

The latest industry data suggests that computer-game narratives contribute greatly towards their marketing (Entertainment Software Association, 2015). In stark contrast to this, statistics also show that most players fail to actually complete story-driven AAA[3] titles (Moriaty, 2014).

These trends seems to indicate a growing inclination in the games industry towards utilising game narratives as a way to market conventional gameplay.

Regardless, computer games consist of a diverse range of genres as well as game mechanics. It is now common to find narrative elements in genres previously notable purely for their gameplay systems. From the classically narrative-heavy genres such as Roleplaying, Adventure, Visual Novels, to iconic gameplay genres such as Beat 'Em Up, Puzzle, Hack-and-Slash, Simulation and more, "…almost all games benefit from story elements"(Soren Johnson, 2013).

This research will analyse game mechanics recognised for their narrative potential as a holistic investigation of established game-narrative design practices.

[2] Indie games (or independent games) are computer games generally developed by an individual or a small team without financial support from a third-party publisher.
[3] AAA or 'Triple A' denotes games with considerably high levels of development budget and marketing.

2.2.2 Indie Game Case Studies

AAA computer-games have often pursued advancements in graphical realism and a more *cinematic gaming* experience (Tassi, 2015). If *The Order: 1886* (Ready at Dawn, 2015) is the equivalent of a Hollywood blockbuster adhering to three act structures and genre tropes to satisfy mass market audiences, then what does the opposite look like?

In the realm of independent games development, designers have been exploring a different ideology – similar to poetry, short stories and short films' capability of distilling storytelling down to core essentials.

With smaller resources, but more room for experimentation, independent developers have led the way for innovative game design – in both ludic and narrative fronts.

While many efforts are less polished than their AAA counterparts, I have found many indie game titles to be just as effective, if not considerably more so, in delivering engaging narrative experiences.

This led to me to place the project's research and methodological design focus on successful computer-narrative experiences that were created as a result of engaging meaningful play, rather than strong production value or scale.

2.3 Iterative Design and Rapid-Prototyping

For ***Dear Diary***'s design and implementation, I have adopted an iterative design methodology.

Iterative design is a cyclic process of consisting of Design, Implementation, Playtesting and Evaluation:

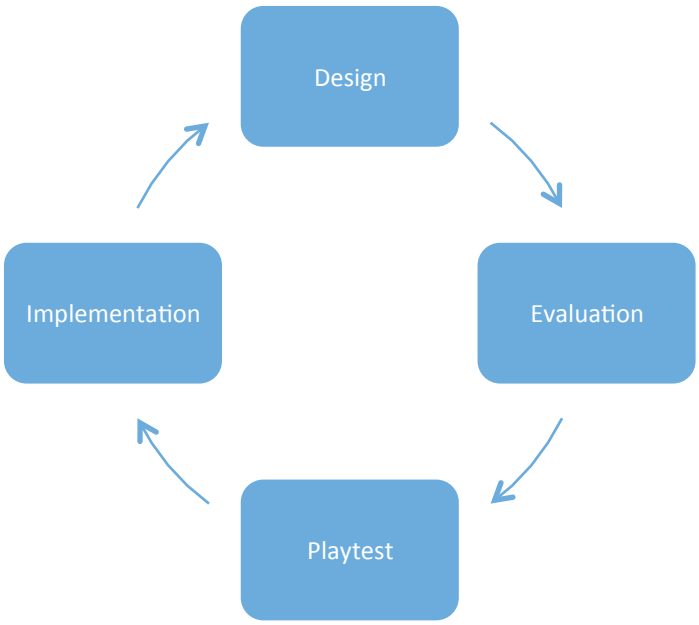

Figure 1. A standard feedback loop found in the Iterative Design Process.

Utilising an iterative process meant that I was able to rapidly prototype new narrative and gameplay systems/ mechanics in response to my theoretical research. This approach is also a common indie game development practice, in contrast to "the big studio ideology of immovable production paths"(Will Luton, 2009). The popular practice of *Game Jams*[4] are great examples of rapid prototyping utilising an iterative process. Many successful indie games such as *Evoland*,(Shiro Games, 2013) *Surgeon Simulator*,(Bossa Stdios, 2013) *Nuclear Throne* (Vlambeer, 2013) and *Titan Souls* (Acid Nerve, 2015) all began life as game jam entries before being further developed as complete titles.

By following this process, I am able to utilise necessary constraints to follow an indie game development model as well as incorporate new research findings into the design and prototyping process.

[4] Game Jams are online/ in-person gatherings of game developers where one or more games are created under a time or theme constraint.

3. Concept & Contexts

Clarification:

I have chosen to use the term computer-game in this thesis as it is more appropriate for the context of the research and discussions. Despite the more mainstream popularity of 'videogames' (or 'video games'), this term's historical roots lies in game consoles or arcade experiences reflecting its relationship with the 'video'-screen. I believe the processes of interactivity and agency provided by the underlying digital/ computer technology more accurately reflects this project's research goals. However, this does not mean the term computer-game shall only refer to games on PC systems, as from a technical perspective – home and handheld consoles, mobiles, arcades and more are all computer systems.

> *The study of games and narrative is an interdisciplinary field of inquiry that has been surprisingly contentious. Game design has a specific set of concerns that sidesteps many of these debates. In considering games as narrative play, the primary question is not Are games narrative? but instead How are games narrative?*
>
> - Salen & Zimmerman, *Rules of Play* (2004)

This project explores computer-game narrative from holistic and multi-faceted perspectives. To use the question of "How are games narrative?" as a starting point – we must first begin by acknowledging its roots, influences, and historical context within the broader scope of 'storytelling' – an integral component of every human civilisation and culture. We must then contextualise narrative's relationship with the concept of *Interactivity,* and more specifically *Gameplay*.

The project shall also seek to answer not only the question of "what *kind* of stories can be/have been told in computer-games?" But also "why have we chosen to tell *these* stories?" Furthermore, rather than "what are the best stories *in* computer-games?" We must discuss "what are effective components of an engaging computer-game narrative experience?"

To arrive at meaningful answers to these questions, key concepts must be identified. This project shall investigate the role of narrative in computer-games, from its relationship with game *mechanics*, *frameworks*, *genre* (both in terms of gameplay and narrative) to key concepts such as Meaningful Play, Immersive, Emotional, and Spatial experiences.

3.1 Games and Narrative

> *A game is a voluntary interactive activity, in which one or more players follow rules that constrain their behaviour, enacting an artificial conflict that ends in a quantifiable outcome.*
>
> - Eric Zimmerman (2004)

The main focus of this research lies in computer-game stories. However, to initiate the discussion we must first assume from a conceptual standpoint – it is necessary to investigate game stories as *narrative experiences*, and games as *interactive systems.*

Furthermore, *narrative* and *games* are both phenomena vastly predating the advent of digital media. It is important to approach this questioning from an interdisciplinary angle in order to uncover the most meaningful common ground.

2.1.1 Narrative

Narrative, and the art of storytelling have long existed predating even writing as a form of communication. (Eder & Cajete, 2010).

With the arrival of the *Digital Age*, it was only natural that computer-games – a new form of media born from the consummation of technology, entertainment and communication would become the next mainstream narrative platform.

Thus, it is equally important to research the historical context as well as analyse computer-games storytelling in its own design space.

The three key characteristics of narrative *situation*, *character* and *form*[5] (Salen & Zimmerman, 2004) are all part of a computer-game's interactive experience.

Just like narrative, games are represent a way of organising the human experience. *Events*, *progression*, *conflicts*, *goals*, and *player agency* are all just some of the many components that contribute both to narrative as well as gameplay.

All of this arises from what lies in the core of a computer-game experience – interactivity.

2.1.2 Narrative and Interactivity

Interactivity is not a concept that is wholly unique to computer-games, but it is one that sits at the heart of good game narrative experiences. The key goal of this

[5] *Situation* being a series of events that change over time, *character* being its system of representation, and *form* being constitution of said representation through patterning and repetition.

research is to identify particular aspects of interactivity which are relevant to storytelling in computer-games.

Interactivity sits as the foundation of both narrative and gameplay as part of a game experience and is "closely linked to the concepts of *design*, *systems* and *meaningful play*" (Salen & Zimmerman, 2004). From a narrative perspective, interactivity is the key component of computer-games that sets it apart from traditional storytelling mediums such as literature or film – making games non-passive by nature.

There are four modes of narrative interactivity relevant to computer-games (ibid):

1. **Cognitive Interactivity** – This represents much of the psychological and emotional player response to computer-game experience. For example, re-playing an "old-school" game in a modern context presents a very different experience in contrast to memory. This also contributes to the phenomenon known as the "*spirit*" of a game – i.e., *Bioshock* (2K Games, 2007) is not related by *lore* to the *System Shock* (Looking Glass Studios, 1994) series, but is considered to be a "spiritual successor" due to the atmosphere and open-ended design principles shared between the titles.

Figure 2. (Above) System Shock 2 (1999) compared to Bioshock (2007). Both games feature similarities in the cognitive experience of play, allowing players to explore mysterious dangerous, claustrophobic settings while hacking, shooting and upgrading themselves to survive.

2. **Functional Interactivity** – structural interaction with both the real and virtual components of the game. User interfaces, input response times, how animations represent actions, frame rates, legibility of in game assets, all these elements and more not only play a huge part in maintaining the *flow*[6] of gameplay, but also contribute enormously to the narrative context of the player's spatial experience.

   In *DmC* (Ninja Theory, 2013) the latest reboot of the hack and slash series *Devil May Cry* (Capcom, 2001), delayed input response time and a locked frame rate of 30fps resulted in a more *sluggish* combat experience in a series which relies heavily on precision and timing. Previous entries in the series were famous for extremely fast combat mechanics and potential to string together unique combos, which contributed to the player agency and narrative impression of the main character Dante. In *DmC*, not only did the new Dante fail to resemble his predecessor in terms of looks, more importantly, he failed to *feel* like Dante.

Figure 3. (Above) DmC: Devil May Cry (2013), (Below) Devil May Cry 4 (2008) demonstrates how the gameplay might 'look' similar but 'feel' very different.

[6] Flow Theory (Csikszentmihalyi, 2014) is a popular psychological concept widely reference in computer-game theory in reference to the mental state of complete focus in an activity with a high sense of fulfilment – achievement of flow is commonly referred to as *being in the zone*.

3. **Explicit Interactivity** – the 'meat' of a computer-game's interactive experience. The act of play, following the rules laid out by the game system, how events unfold, meaningful choices, dynamic simulations and other aspects of a game programmed and designed by its creators. The narrative experienced from the two-way *feedback loop* between the game and the player, is what separates a computer-game narrative experience to more passive mediums such as books/ films where the audience is *presented* with a story.
4. **Meta-Interactivity** – computer-games are capable of generating narrative experiences beyond the *designed system*. For example, many fans of Japanese game developers From Software consider a number of their titles – the *King's Field* (1994) series, *Demon Souls* (2009), *Dark Souls* (2012), and *Bloodborne* (2015) to have a shared universe and lore connection.

A successfully *designed system* creates an interwoven *simultaneous* occurrence of all four modes of interactivity. "Not all interaction is *designed interaction*" (Salen & Zimmerman, 2004), however, designed interaction contains *internal structure* and *context* that assigns *meaning*. When player agency in a game can be effectively contextualised, a narrative experience is born.

This research seeks to investigate the effective methodologies to create meaningful narrative in a computer-game's *space of possibility*[7].

2.1.3 Narrative and Play

For this research I have chosen to define *play* as a subset aspect within a broader computer-game experience capable of producing *narrative*.

A game designer's role lies in creating the *rules*, *framework*, and *core mechanics* of a game system to indirectly build the player's experience through *meaningful play*.

Games are also *emergent systems*, the interaction between *system* (a formal set of structure and relationships defined by rules) and *context* (the spatial experience where play takes place) generates meaning through a series of actions and outcomes.

The goal of this research is to investigate the relationship between *emergent* as well as *embedded* (author-led) narratives in computer-games to determine the most effective balance and methodology for effective interactive storytelling practices.

2.1.4 Embedded Narratives

Embedded-narratives are the *crafted story* components of a game. These are the pre-determined characters, locations, quests, plot and any all assets with *meaning*

[7] Salen and Zimmerman (2004, p. 69) defines this as "the space of all possible actions and meanings that can emerge in the course of the game." This concept ties together *meaning*, *design*, *systems*, and *interactivity*.

attributed to them by the designers under the framework of game system. This can resemble traditional linear media in the form of an expositional cut-scene, or discovered by the player through interaction. Embedded narratives can take many forms, and conveyed through a variety of *means* – the goal of this research is to identify the most effective means through *play*.

2.1.5 Emergent Narratives

When a player experiences *ludo-narrative consonance*[8] within a game systems' *space of possibility* – an *emergent-narrative* is born. This encompasses most *moment-to-moment* interaction with the core-mechanics of a game, when a player is told by an non-player-character in *Elder Scrolls V: Skyrim* (Bethesda Game Studios, 2011) to travel to another city, the actual journey itself becomes an emergent-narrative directed by the player. Perhaps the player character rides there on horseback, or maybe he/ she travels on foot and is ambushed by enemies on the way. Depending on the context created by player choice, new goals, conflicts and uncertainty can arise to generate narrative drama and emotional responses.

However, not all emergent-narratives are pre-designed by computer-game developers. A player's personal interpretation and reflection of both their actions inside the game as well as the *meta-experience* of play can create further narrative through *re-contextualisation* and *remediation* outside of the developer's expectations.

Rather than researching *embedded* and *emergent* narratives as two separate structures and design practices, ***Dear Diary*** seeks to pursue effective synergies and practices that generate *stories* via meaningful *play*.

2.1.6 Immersion

It is important to emphasise that while an *immersive* computer-game experience is a beneficial to the aims of this project, it is not the end goal, but rather one of the anticipated outcomes which supports good narrative experiences.

Similar to other storytelling mediums, *suspension of disbelief* provides great contribution to narrative engagement. However, virtual simulation of reality via a game's representational space does not create meaningful narratives in itself. I believe immersion and engrossment is simply a *component* of an effective game experience.

Furthermore, it is worthwhile to note that indie game titles such as *To the Moon* (Kan "Reives" Gao, 2011) utilise extremely simplistic visuals to generate a very engrossing narrative experience – a very clear indication that immersion is not exclusively tied to a representational or sensual replication of reality. The key goal lies in designing game systems which immerse players through *meaning*.

---

[8] When themes/ goals in gameplay and storytelling work cohesively with one another. In the opposite scenario, thematic disconnections and conflicting goals between gameplay and story results in *ludo-narrative dissonance*. i.e., a common criticism towards the latest *Tomb Raider* (Crystal Dynamics, 2013) prequel, where an dramatic story segment featuring the inexperienced Laura Croft taking a human life for the first time is followed by a gameplay segment where the player kills many enemy characters with impunity.

Figure 4. A puzzle segment in To the Moon (2011) demonstrating narrative context within a gameplay mechanic

3.2 Game Narratives as Systems of Meaning

> *Playing a game means making choices and taking actions. All of this activity occurs within a game-system designed to support meaningful kinds of choice-making. Every action taken results in a change affecting the overall system of the game.*
>
> - Salen & Zimmerman, 2004

2.2.1 System of Representation

A computer-game's *system of representation* plays a large role in its storytelling capabilities. All visual, language, moving image, objects and audio elements both inside and outside of the game can potentially act as *narrative descriptors* (Rules of Play, p. 419) to generate context. Every element acts as a potential bearer of *embedded* narrative as well as catalyst for *emergent* stories.

It is part of the game designer's responsibility to craft an effective system of representation, to fully communicate the game's lore, identity and maximise narrative play. I believe it is not enough to simply 'write the game's story' and communicate this to the player, it is more poignant to create a narrative space where narrative descriptors can be utilised to their full potential inside the game's *space of possibility*. This can be as complex as a fully fleshed out fictional world story framework or as abstract as creating an emotional atmosphere to generate potential for contextual interpretation.

2.2.2 Cognitive Framework

As previously mentioned, an effective computer-game narrative experience should generate a state of immersion in *meaning*. This should not be achieved by removing the context of *self* from the gaming experience, but rather in *cognitive harmony* with player and character identity.

The game's narrative experience should enable synergy between the three-fold framing of player consciousness: in-game *character*, game *player*, and a real-life *person*. The relationship between the game system and the player should be respected and symbiotic.

Figure 5. Ryu in Street Fighter IV (2008)

When players control Ryu in *Street Fighter IV* (Capcom & Dimps, 2008), they engrossed as the character (*I'm engaging in an honourable battle to determine the strongest fighter*) as well as the player (*I must conserve my meter for an ultra attack*). Finally, they are also aware of their surroundings in a broader framework in the real-world – perhaps they are impressing a crowd with skilful play, or matched against a close friend and remembering the opponent's playstyle from previous experience.

Demonstrating such effective embodiment of all aspects of a player's consciousness creatives the perfect context for immersion and interpretation of *meaning* through *play*.

2.2.3 Meaningful Play

Thus, it must be stated, that the core concept of my research lies in the pursuit of *meaningful* play. To achieve this, a game developer must approach the process from a semiotic ludo-narrative point of view. In a successful game system, meaning is created as a result of *discernible* relationships between player action and system outcome. One of the first instances of meaning created in a computer-game experience is conveying the player's point of view.

In *Mega Man X* (Capcom, 1993), once the player starts the game, they are immediately dropped into the first stage. Within the first few seconds alone many narrative meaning and contexts are established. First, as the player presses the directional buttons, the titular character X moves swiftly in response, thus allowing the player to understand the player *character* and their role in the game world. Secondly, as they player continues, they realise X is able to jump up walls and shoot/ charge beams of energy from the buster canon in his hand – allowing them to come to the realisation that they are not only playing as a robot – but a robot *soldier*. All of this characterisation is established through the context created by the player's actions and the meaning derived from the game system's response.

Figure 6. Mega Man X (1993) conveying a sense of helplessness to the player via scripted interruption during loss to a boss

Furthermore, meanings become engaging when they are *intergrated* into the game's overall context. Just as the player comes to grips with controlling X, they are introduced to enemies, which the player antagonises because **A.** they hurt X if up on contact and **B.** they actively attack the player. The player can both interpret this on a mechanical level ("I must defeat *these* robots or I'll lose the game") as well as a narrative one ("I am being hunted"/ "X is a lone wolf as his enemies vastly out number him"). The underlying *narrative* themes of a hero's journey, war and oppression are successfully expressed through *meaning* generated by the experience of *play*.

2.2.4 Dimensions of Narrative and Play

In *A Narrative Theory of Games* (2012) Aarseth proposed analysing the ludo-narrative design space as four independent dimensions consisting of ***World***, ***Objects***, ***Agents*** and ***Events***.

The model places the four ontic dimensions against a scale between two poles: the narrative and the ludic. A closer proximity towards the narrative pole suggests a more *author-driven* narrative experience: where narratives are heavily embedded into the game system or presented in a more traditional storytelling manner as a linear sequence of events (i.e., pre-scripted dialogue, cutscenes). The ludic pole represents more interactive experiences of play where narrative outcomes are often more emergent.

This variable four-dimensional game narrative model has had a great influence on this project, and as such it is introduced below:

Ontic level:	World	Objects	Agents	Events
Narrative pole	Inaccessible	Noninteractable	Deep, rich, round characters	fully plotted
	Single room	Static, usable		
	Linear corridor	Modifiable		Dynamic sate-lites/ playable story
	Multicursal labyrinth	Destructible	flat characters	
				Dynamic kernels
	Hubshaped quest landsape	Creatable		
Ludic pole	Open landscape	Inventable	Bots, no individual identity	No kernels (pure game)

Figure 7. Aarseth's Variable Model of Computer-game Narratives

I find this to be an effective model to utilise to further my research goals as all four ontic dimensions contribute greatly towards the key narrative and gameplay concepts previously covered. All games and all stories contain these four elements, and thusly, they allow an objective investigation of common grounds as well as effective methodologies and design practices.

2.2.5 Worlds

Worlds define both the narrative framework of a story, as well as the spatial framework of a game. Game worlds are typically *linear*, *multicursal* (*non-linear*), or *open*. Similarly, this also underpins the game's perceived *narrative structure*.

Open world games such as *Minecraft* (Mojang, 2009) are not only sandbox in gameplay, the way stories unfold inside the game for each player are also open-form in nature. The game gives the tools to the player and asks them to build and explore a personalised game world, to generate an emergent narrative experience.

It is my belief that designing effective frameworks in computer-game worlds as *narrative descriptors* can lead to a more *intuitive* understanding of the broader context.

Figure 8. Player generated city building in Minecraft (2009)

2.2.6 Objects

Objects in a game can be *dynamic*, *user-generated*, or *static*. This has a great effect on the relationship between *embedded* and *emergent* narrative structures, and how they are communicated to the player. The design of the game system also has a profound influence, as a result of ludic (dynamic/ simulated) or more narrative (static) methodologies.

In *FTL: Faster than Light* (Subset Games, 2012), the ship players control, crew, weapons, enemies and other elements are all user-generated, or dynamically created as a result of the player's actions (i.e., choosing a path across the galaxy via waypoints). As a result, the narrative outcome for each player becomes wildly different. One player may become the captain of a powerful ship and crew, eventually saving the galaxy, another might be ambushed by space pirates and face a crushing defeat at the beginning of their journey.

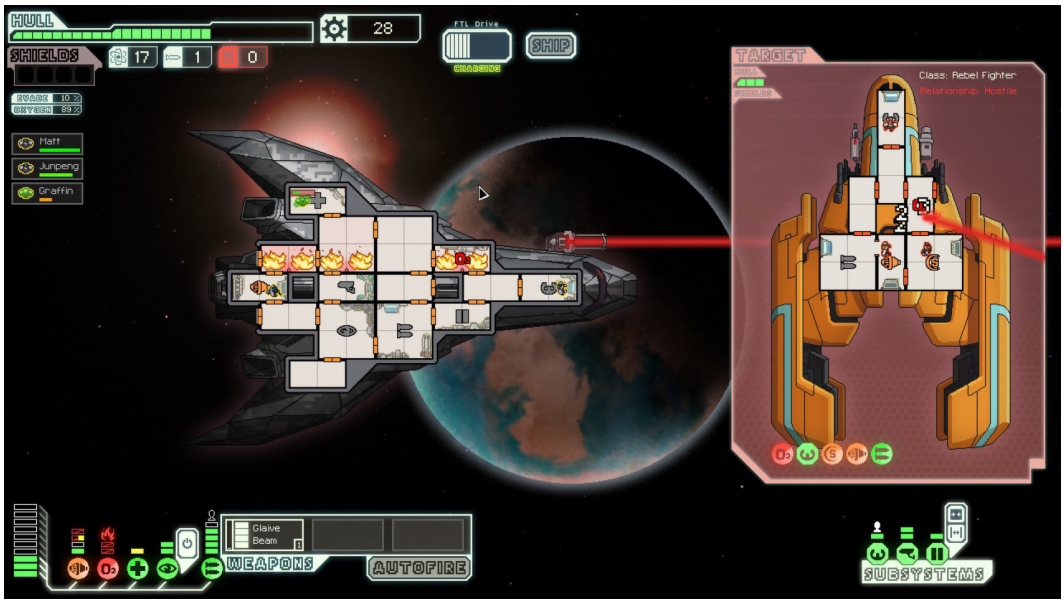

Figure 9. A personalised player spaceship in combat in FTL: Faster Than Light (2012)

In the *Uncharted* (Naughty Dog, 2007) series, the story unfolds in a much more linear fashion, the player assumes the role of Nathan Drake, and follow a pre-written pathway featuring the same objects in each play through. However, the world is carefully crafted by the developers to convey lore, history, conflicts and other embedded narrative components for the player to discover.

Figure 10. Action sequences like this in Uncharted (2007) are pre-scripted to deliver the best camera angle and visual storytelling experience for players

Good game design should be reflected in successful creation of objects in the game space. When objects are *static*, they should communicate embedded narrative to the player. When they are *dynamic* or *user-generated*, they should help provide context and act as agents of *narrative emergence*.

2.2.7 Agents

Agents play a key role both in the core gameplay (player character, enemies, supporting NPCs[9]) and a crucial component of the narrative. When agents are well-defined in personality, motivations and more, they lean towards the narrative pole as *characters*. However, they can also be presented as hollow *bots* contributing mainly towards the ludic experience as part of a broader narrative context/ setting.

The effective design of agents is very closely related towards the other three ludo-narrative elements. *Half-Life* (Valve Corporation, 1998) features a rich *linear* world, with meaningful *static* objects that can be *dynamically* manipulated, hence the need for well-crafted empathetic characters.

[9] Non-Player Characters.

Figure 11. Alyx, one of the most memorable characters in Half-Life 2 (Valve Corporation, 2004)

On the other hand, *Counter-Strike* (Valve Corporation, 1999), the famous multiplayer mod of *Half-Life* features A.I. bots for the purpose of team balance on a ludic level and act as representations the fit the terrorists versus counter-terrorists theme and setting.

Figure 12 Multiplayer bots in Counter-Strike (1999)

Well-designed game agents should *participate* in the narrative context or act as proxies of system *outcomes* as a result of player *action*.

2.2.8 Events

Computer-game events can be *open*, *selectable*, or *plotted* in sequence. Between the extremes of narrative and ludic poles, we find narrative experiences ranging from *nonlinear stories* (Twine[10] games such as *The Writer Will Do Something* (Burns, 2015)), to *linear games* (such as *The Order: 1886* (Ready at Dawn, 2015)[11] , to *non-linear games* (such as the open-world *Grand Theft Auto V* (Rockstar Games, 2013)), to finally "pure" game experiences (such as *Minecraft* (Mojang, 2009)).

Computer-games often use more than one method to communicate events to the player. In *Mass Effect* (BioWare, 2007), narrative and game progress can take place both in the context of missions which the player actively carry out via gameplay, or in the form of cut-scenes conveyed as traditional linear storytelling. It is the role of the game designer to convey events in a manner that supports both narrative *engagement* while maintaining the *flow* of *play*.

[10] *Twine* (Klimas, 2014) is a software tool for creating interactive fiction in the form of HTML webpages.

[11] An example of bad implementation, in contrast to previously discussed example *Uncharted*, *The Order: 1886* was critically panned for containing both linear narrative as well as a lack of depth in the gameplay ("'The Order 1886' Hands-On," 2014).

4. Analysis of Games

As previously discussed, computer-game designers do not *directly* craft the player experience. Their role lies in building the systems and framework that house players *interact* with to evoke meaningful *outcomes*.

Thus, it is worthwhile to investigate game design in acknowledgement of industry standards as well as emerging practices in the pursuit of engaging computer-game narrative experiences.

4.1 Ludo-narrative Mechanics and Game Genres

To begin my analysis of games, I have chosen to investigate three popular mechanics often utilised in notably narrative-heavy computer games: *Statistical Character Development*, *Character Creation*, and *Branching Choices*. These are all established examples of systems of play often used to generate narrative outcomes.

4.1.1 Statistical Character Development

Commonly found in *Role-Playing Games* (RPG's), this mechanic traces its roots from tabletop games such as the widely influential *Dungeons & Dragons* (Gary Gygax & Dave Arneson, 1974), and other Pen-and-Paper RPG systems.

In direct action based systems found in games such as the *Mario* (Nintendo, 1985) series, players exert control over the titular character through a pre-defined set of limitations: how tall Mario jumps, how fast he runs and how many times he can physically-contact enemies before a game over. In the narrative context, the difficulty of Mario's quest to save Princess Peach and defeat his nemesis Bowser is completely dependent on player skill through gameplay.

In contrast, statistical systems shape both gameplay and narrative growth of characters in a variable format to match the player's actions. Abstract concepts such as experience points and character levels have grown to become narrative indicators of the player's growth. In the primarily *hack-and-slash Diablo* (Blizzard North, 1996) series, an entire ludo-narrative system is developed based upon the feedback loop of defeating enemies or crafting *loot*[12] to raise the statistical damage output of their character – in order to defeat stronger enemies. In platforming-based *Mario* games, once the player 'beats the game' then Mario's quest is over from a narrative context. Whereas in *Diablo 3* (Blizzard Entertainment, 2012), new difficulty levels and challenges are constantly introduced through the scaling of both enemy and player character stats.

[12] Powerful in-game equipment.

Figure 13. In Diablo 3, the stat Intelligence is literally a Wizard's source of power.

In MMORPG's[13] such as *World of Warcraft* (Blizzard Entertainment, 2004), this is made even more dynamic as millions of other players are all constantly getting "stronger" in the form of statistical upgrades. As such, unlike novels, films, comics and other forms of literature, the hero's journey can be communicated through a direct statistical representation gameplay mechanics.

4.1.2 ***Character Creation***

Another ludo-narrative mechanic inspired by table-top RPG's often found in computer games is *character creation*. Rather than *playing as* a predefined character and guiding their actions, players are able to immerse themselves into the game's narrative setting through personalising their in-game *avatar*[14].

Other than cosmetic effects, many games also utilise this process to shape the effects of statistical character systems. Akin to *rolling a character* in *Dungeons & Dragons*(1974), many computer RPG's alter interaction and combat dependant on stats and abilities. The *Fallout* series(Interplay Entertainment, 1997) presents this in the form of the S.P.E.C.I.A.L ruleset. S.P.E.C.I.A.L defines the primary attributes of the player character as Strength, Perception, Endurance, Charisma, Intelligence, Agility, and Luck. Much like dice roll checks in tabletop RPG's, these stats have a direct effect in gameplay: combat efficiency, types of weapon/ armour the player can use, the ways NPC interact with and respond to the players, player choices in response to story events and more.

[13] Massively Multi-player Role-Playing Games
[14] Graphical representation of the player, the *character* they control *in-game*.

In games such as *The Elder Scroll* (Bethesda Softworks, 1994) series, *Dark Souls* (From Software, 2012), *Dragon's Dogma* (Capcom, 2012), the player character's height and weight directly affects their in-game stamina, movement speed, and carrying capacity. As such, these stories could be experienced from the point of view of a teen who grows into a great warrior or an old man who matures into a masterful mage. Similarly, in the *Dragon Age Origins* (2009) and *Mass Effect* series (2007) by BioWare, players are able to customise their character's background which leads to diverse starting areas and interactions over the course of the games.

Figure 14. In Mass Effect (2007), players are given a chance to personalise their character's narrative background before the game scenario begins.

All these dynamic changes allow for a more personal level of connection to their in-game characters. Not unlike their tabletop counterparts, through this process of personalisation, staying "in-character" is encouraged by the game system.

According to Harris (2011), "a well-fitting character is more likely to evoke a bond between player and character, prompting the player to think and act as their character would in that situation; or making their character act as *the player* would in those situations".

In simulation games like *The Sims* (Maxis, 2000) series, without the restraints of a predefined overarching plot scenario, character creation is utilised to even greater potential to generate emergent narratives.

4.1.3 ***Branching Choices***

Another mechanic commonly used to give players more narrative influence is *Branching Choices*. This can be presented directly to the player in the form of dialogue responses, interactive cues to a mandatory decision, or tracked by the system in the background to affect changes in plot direction.

Visual Novel is a genre famous for building its entire narrative premise based on this mechanic. Similar to the traditional *Choose-Your-Adventure* books, players are offered modular narrative components in what would otherwise be separate linear storylines.

In games found in the *Dating Sim*[15] subgenre, narrative choices themselves are often the main gameplay mechanic. Players are frequently presented with choices which can dramatically affect how other NPC's perception of the narrating character (who represents the player's point of view). This gameplay system has such an impact on wider perspective that entirely new terminologies have been created and solidified into Japanese, anime, and gaming culture. Typically, choices leads the player down specific "*routes*" of character development and when important decisions or choices have been made - a "*flag is raised*".

Figure 15. This is subverted in meta-narrative fashion, when one of the love interests in ***Kimi to Kanojo to Kanojo no Koi*** *(Nitroplus, 2013) breaks the fourth wall and accuses the player of infidelity for starting a new game save and pursuing a romantic relationship with another female character.*

Branching choices have also been popularised in modern *Adventure games* by western developers such as *The Walking Dead* (Telltale Games, 2012), *Heavy Rain* (Quantic Dream, 2010), *Life is Strange* (Dontnod Entertainment, 2015) and *Until Dawn* (Supermassive Games, 2015). These narrative-heavy games often promise a "cinematic experience" (Nutt, 2013) accompanied by the ambitious phrase - "your choices matter". Despite this, players and critics alike are often quick to point out that most of these gameplay systems offer choices that are "…either unsubstantial or long-term investments with disappointing [pay-offs]" (Do Your Choices Matter In Until Dawn?, 2015).

This is mainly because consequential branching choices comes with a cost – the need to find a compromise between narrative consistency and player agency. Unlike

[15] Romance themed Visual Novels.

traditional RPG's where a Dungeon Master (DM)[16] can respond dynamically to player choices and actions. Player-generated characters in computer games are limited by the digital A.I. and game systems. Increased player agency comes with a higher need for the system to respond to actions and choices with meaningful consequences. When this criteria fail to meet the player's expectations of how *their character* would act, *narrative dissonance* is created. The controversial ending to *Mass Effect 3* (BioWare, 2012) where all player choices given by the game system led to the same ending has been often deemed as "…[disrespectful] to its most invested players"(Sparky Clarkson, 2013).

So how can we overcome this challenge? The AAA games industry has yet to arrive at an answer. However, in recently years a number of indie games have been consistently praised for their "…new approaches to storytelling … through unique game designs" (Muscat, 2014).

[16] Dungeon Master (also called Game Master) are game organisers, referees, narrators of tabletop games and RPGs who are responsible for carrying out the rulesets of the games and communicating the narrative and consequences of player actions.

4.2 Indie Game Case Studies

In this section, I analyse three indie games across different genres, narrative themes and development methodologies. They represent unique design philosophies towards ludo-narrative design, and were instrumental in shaping my own development process leading up to ***Dear Diary***.

4.2.1 To the Moon (2011)

Figure 16. Exploring memories in To the Moon (2011)

The first commercial production by game designer by Kan "Reives" Gao and his indie game team Freebird Games, *To the Moon* (2011) is a 16-bit top-down 2D adventure game. Built on the RPG Maker XP engine, commonly used to create JRPG-style[17] experiences, To the Moon forgoes genre conventions such as battle, inventory or party systems to place the core focus on a story-driven experience.

From the perspective of two scientists, the player explores the mind of Johnny Wiles – a dying old man in order to fulfil his lifelong dream of travelling to the moon. The narrative is conveyed the game experience via embedded narratives in the form of key memories, as the player comes to understand more about Johnny's past. As the player ventures deeper into past memories, *conflict* is created when instead of an immediate narrative exposition, the player finds more unexpected questions. This acts as a *motivational technique* (Freeman, 2004) to encourage the player to continue interacting with the game system (on a *ludic* level) and explore Johnny's

[17] JRPG or Japanese Role-Playing Game is a categorical term commonly used to describe role-playing games created in Japan or heavily traditional conventions set by genre defining games such as *Dragon Quest* (Horii, 1986) and *Final Fantasy* (Sakaguchi, 1987).

memories to solve the mystery (*narrative* engagement). This is very effective as narrative and gameplay progression unfolds together to generate meaningful play.

The game takes this harmonious relationship between gameplay and storytelling to a higher level by embedding not only narrative, but emotional context within the game mechanics as narrative symbols. A key gameplay objective is to discover meaningful symbolic objects in Johnny's past in order to delve deeper into his memories. Through this process, the player does not interact directly with the story of Johnny's life, but rather through a non-linear sequence of key narrative experiences that evoke an emotional response within both the player as well as the two protagonists. Item collection – a familiar but often mundane game mechanic was effectively as a narrative tool to add emotional and narrative depth.

Based on Aarseth's ludo-narrative model (2012), *To the Moon* is a great example of an well-defined narrative *world*, featuring story-rich *objects* and *characters* that convey *events* in an nonlinear interactive fashion.

4.2.2 Papers, Please (2013)

Papers, Please (2013) by indie game developer Lucas Pope is a great example of storytelling through the design of meaningful play.

In the game players take on the role of an immigration officer working on the borders of the fictional dystopian nation of Arstotzka. On a purely ludic level, the game is crafted as a heavily rule-based puzzle game that tests the player's memory, logical thinking, macro and micro-management skills, as well as reaction time. However, all of this is structured under an expressive narrative context. Every interactive action the player takes presents both a choice/ consequence feedback with both the core gameplay mechanics as well as acting as a narrative descriptor within the game's larger system of representation.

Figure 17 Emergent story component in Papers, Please (2013).

The game reinforces core gameplay mechanics (checking, stamping, or rejecting passports) and narrative themes (mundane nature of the job, oppressive nature of

the setting) through patterning/ repetition of *situation*, *character* and *form* (Salen & Zimmerman, 2004).

The game presents a non-linear storyline that evolves as a result of player choice – *Choice* being the keyword of the gameplay as well as narrative. Every action has a consequence, more passports cleared on a daily basis (against a ticking clock to create more gameplay challenge and narrative tension) results in more money for your starving family. However, NPC's constantly challenge the player through bribes, anecdote of their personal struggles, or challenging the player's worldview of working as an agent of oppression. It's quite difficult to encourage players to think about how to win the game, while reflecting on their personal principles and morals, but the story design of *Papers, Please* makes it work.

In *Papers, Please*, Pope crafted a single room *world*, featuring modifiable objects and broad range *agents* from gameplay driven *bots* to rich *characters* in a series of non-linear *events*. The result successfully delivers a very powerful *emergent* narrative experience inside a self-contained and often understated game system.

4.2.3 ***Storyteller (in development)***

Figure 18. Screenshot from Storyteller

Storyteller (Benmergui, In Development) is an upcoming full indie game title based on a previous flash game of the same name (Benmergui, 2008).

Described as a storytelling puzzle game based on the language of comics, *Storyteller* uses a computer-game system as a framework for *sequential storytelling*. True to its name, the game's core mechanic asks the player to become an agent of storytelling. Presented in a level-based puzzle game structure, players have to fulfil narrative conditions (*Eve breaks two hearts but ends up heartbroken*) set by the game in order to progress. This is achieved by giving players *agency* to manipulate characters and objects in the game to dynamically generate emotional responses and narrative

context (*How and why does Eve hurt others and end up being heartbroken? The story is totally dependent on how you solve the puzzle*).

In a meta-design sense, *Storyteller* is the most logical blend of gameplay and narrative – where storytelling elements itself become gameplay mechanics. The game *system* is the narrative *framework*, and the player is also the creator of the *narrative context*.

Storyteller represents a unique design philosophy towards storytelling in computer-games. It channels both the *ludic* and *narrative* poles of Aarseth's (2012) game-narrative model simply by *reinforcing* the player *action/ feedback* system of interaction fully towards the generative of *narrative play*. Most importantly, the *emergent* stories generated are incredibly *personal* to the player, placing them alongside the game designer as *co-creator* of the experience.

5. Practical Component

This section describes the iterative design-led research and development process utilised in this project – leading up to the final concept for ***Dear Diary*** – an experimental computer game narrative experience.

5.1 Iterative Prototyping

5.1.1 Aims, methods and outcomes

After developing a better theoretical understanding of the relationship between gameplay and narrative systems, I began to develop a series of prototypes in parallel with my research into ludo-narrative mechanics and indie game case studies.

My aims for this process began as follows:

1. Analyse established ludo-narrative mechanics (as per section 4.1) and identify effective use in smaller frameworks.

2. Analyse indie games notable as narrative experiences (as per section 4.2) and identify effective methodologies in their design to be incorporated into the prototypes.

3. Utilise an iterative design process (as per section 2.3) to prototype efficient and effectiveness of ludo-narrative systems and mechanics.

4. Test effectiveness of both embedded and emergent narrative outcomes.

5. Attempt to convey mood and create emotional outcomes through ludo-narrative design.

The final outcome for the initial phase of the practical component was to develop a new set of conceptual aims for the final ***Dear Diary*** prototype based on the combined learning from academic theoretical research, case study analysis and practical prototyping process.

5.1.2 Dreamdrifter

Inspired by the way *To the Moon* used the basic gameplay mechanic of moving about the environment as a narrative tool, I began prototyping a game concept titled *Dreamdrifter*. Similar to how *To the Moon* was driven by a minimalistic underlying game system, *Dreamdrifter* utilises a blend of point-and-click adventure game format as well as visual novel presentation.

I was also interested exploring the narrative techniques of unreliable narrators, non-linear storylines and multiple vantage point structure. The key gameplay mechanic

allows the player to select and control one of five playable characters across two spatial experiences – reality and a dream world. Selected characters are controlled in a point-and-click adventure game fashion inside the dream world (presented in an abstract impressionistic visual aesthetic), engaging with the other characters and seeking symbolic objects representing repressed memories from their daily lives. When the dream ends, the game experiences shifts to an interactive narrative format (featuring a more realistic art style) where further story unfolds from the selected character's perspective as a result of their actions inside the dream space.

Figure 19. Exploring visual aesthetic for the dream world in Dreamdrifter

I hypothesised this structure would allow me to author five separate components of a larger story for the player to experience in a non-linear fashion.

By scaling down character creation to a choice between fiver different potential player avatars, *Dreamdrifter* would utilise branching choices and story paths as mechanics to generate interesting narrative outcomes. Decisions made by the player on behalf of each playable character inside the dream world will be reflected as both positive and negative consequences in the real life portion of the game. By exploring each character's subconscious psyche and breaking down their social or psychological barriers inside the dreams state. Through experiencing the narrative from different perspectives, the player will gain a broader understanding of the overall story as well as intertwining character motivations and causes of conflicts.

The core narrative concept behind *Dreamdrifter* lies in the construction of a larger meta-narrative framework. *What if when we dream at night – we are actually being controlled by a computer-game player?*

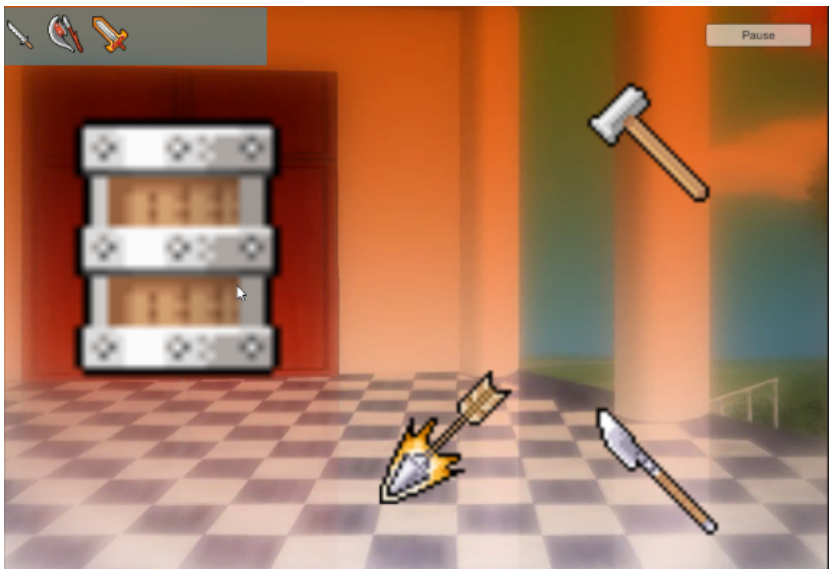

Figure 20. Dreamdrifter in-game interface prototype – picking up and using items.

By building this meta-narrative context into two types of gameplay control schemes (point-and-click and visual novel format), I aimed to break the fourth-wall of the player's *cognitive framework* by bringing the relationship between the *character*, the *player* and the *person* playing the game to the forefront. However, instead of breaking immersion, *Dreamdrifter* would reinforce the player's engagement with the story by including both the player and the act of playing the game as part of the narrative context.

Figure 21. Branching choices and story paths.

However, after reaching a playable prototype state, it became apparent to me that *Dreamdrifter* relied too much on embedded narrative content and was insufficient at encouraging emergent narrative responses from the player. Furthermore, the effectiveness of the concept heavily relied on a large quantity of pre-written consequences for different narrative paths. As previously discussed in section 4.1.3, this is an inherent weakness of branching choices. After continuing research into gameplay systems as frameworks to generate meaning, I trimmed the prototype

down to its core control mechanics and began the iterative process of redesigning better ludo-narrative outcomes.

Key learnings from development and design of this concept was the methodology of confronting the player's cognitive framework, and turning potential *dissonance* between the act of *playing* the game and *enacting* as a game character in to an actual *narrative mechanic*.

5.1.3 Overclock

After investigating *Papers, Please*, I was inspired by the way Pope engrained a majority of the narrative context and experience into the game's core puzzle mechanics. In response, I designed *Overclock*, a *black-market merchant simulator* based in a Cyberpunk setting.

Figure 22. Overclock menu and visual aesthetic design prototype

In *Overclock*, players are tasked with the business and modification process of human augmentation. As part of a day-night cycle based game system and narrative structure, player not only negotiate price and navigate a puzzle based human upgrade system, they also interact with NPC customers in the process – discovering their requirements then customize their body to meet their needs.

I aimed utilise *statistical character development* as a game mechanic to also provide more interesting growth in a narrative sense. Typically in RPGs, character stats grown at a rate determined by the game system in relation to the player's actions. What would happen if the reverse was true? By giving the players the power to manipulate character stats of NPC's instead, they will be able to shape the lives of other characters through a practical gameplay mechanic. Furthermore, by tinkering with the underlying attributes of the game system, the player would be able to have a bigger influence on the overarching narrative.

Figure 23. Prototype of a branching conversation choice in Overclock

To reflect this, I planned a broader narrative context: three conflicting factions exist in the game world – two rival gangs fighting to control the criminal underground, as well as the corrupt government running the city. As the game progresses, player will be able to choose to either align themselves with a faction or pit NPC's against one another for personal gain. This would be implemented through gameplay (i.e., giving one faction a better deal, planting bombs or bugs on an enemy faction) to bring both gameplay benefits as well as different narrative scenarios.

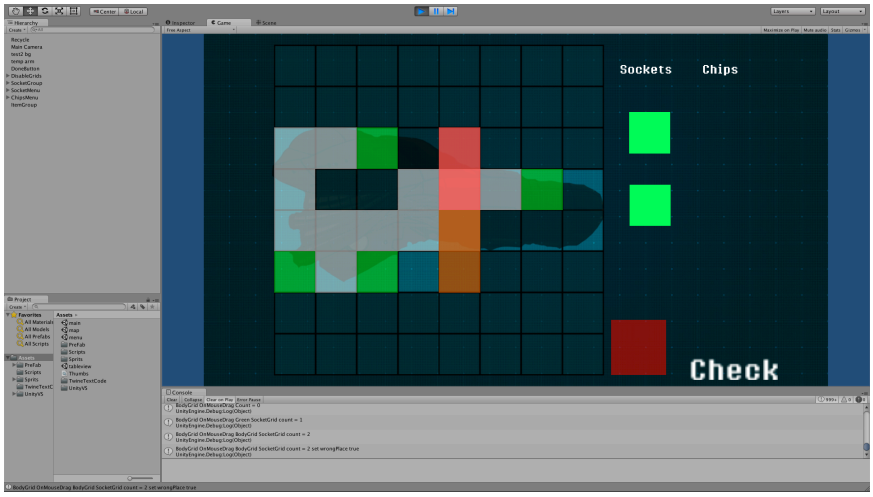

Figure 24. Prototype of puzzle-based human augmentation upgrade mechanics

After testing the prototype in a playable state, I realised that *Overlock*'s execution still heavily relied on the *Visual Novel* control system left over from *Dreamdrifter*. Unlike *Papers, Please*, where narrative and gameplay systems are combined together via the puzzle game interface, *Overclock* still relied on the *Visual Novel* branching dialogue path mechanic for narrative progression. Even narrative outcomes from altering statistical attributes of NPC's only resulted in pre-written plot developments and 'routes'.

Overclock taught me that I was too reliant on embedded narrative techniques and formalised storytelling structures. I was making progress in applying the practice of storytelling through gameplay mechanics. However, my iterative designs so far have neglected the investigation of more minimalistic but emergent ludo-narrative systems.

5.2 Development of Dear Diary

After being profoundly inspired by *Storyteller*'s approach to ludo-narrative design, I re-evaluated my learnings thus far. It became apparent that both *Dreamdrifter* and *Overclock* contained an extremely authored *narrative perspective*. Even in the case of *Overclock* where narrative direction could be affected by its puzzle gameplay. *Storyteller*'s effective use of narrative *closure*[18] as a central mechanic made me realise it was possible to use narrative techniques to design meaningful play. Furthermore, when the results of interaction with game mechanics are *abstracted* and *dynamic*, players have a greater potential to *interpret* and experience more *impactful* personal narratives.

Following this design philosophy and iterative analysis of my learnings thus far finally led me to the design concepts behind the final ***Dear Diary*** prototype.

5.2.1 Dear Diary – Conceptual Aims

After the iterative process of analysis and game design, my aims for the design of ***Dear Diary*** was clear:

1. The game system should focus on essential components, maximising narrative potential through gameplay.

2. The implementation of the prototype should be boot-strapped and minimalistic to simulate the experimental nature of indie game development.

3. The game should feature a balance of embedded as well as emergent narrative through meaningful choice and consequence.

4. The game should engage the cognitive framework of the player and create a meta-narrative experience.

5. The game should be non-linear and clear enough to convey mood and emotion, but abstract enough to create a personalised interpretation.

The core purpose of the practical development process was to create a prototype of a game system that explores some of the concepts covered in this exegesis, primarily: *minimalist* design and implementation, *meaningful* choice/ consequence, *meta*-narrative and *emotional empathy*.

[18] In Scott McCloud's seminal book on sequential narrative theory – *Understanding Comics* (1993). He describes closure as the "phenomenon of observing the parts but perceiving the whole". Namely the act of psychologically filling the 'gaps' between two seemingly unrelated comic panels to create narrative context.

5.2.2 Dear Diary – Concept

Inspired by *Storyteller*, I began designing ***Dear Diary*** by finding a point of reference with a suitable narrative device or practice. In pursuit of my goal of designing a minimalistic narrative experience, I found poetry and short prose to be effective literary frameworks.

I also thought about potential uses for *meta-communication* in the game's *system of representation* to convey a more personal narrative experience for the player.

This led me to the concept of framing the game in the context of diary entries. Diaries are inherently personal from a cultural perspective – it is the one place where humans physically communicate secrets and emotions through a private act of storytelling. The act of simply reading a diary entry underpins and suggests to the player to adopt an empathetic state of mind.

The next logical step, was to integrate narrative creation and interpretation to the goal of the core game mechanic and bring the storytelling experience full circle.

5.2.3 Dear Diary – Design Process Stage 1

The initial design for ***Dear Diary*** was an experimental attempt at abstracting narrative and gameplay systems down to their purest form: a game where storytelling is the main goal and outcome.

In ***Dear Diary***, the player must explore the diary entries of two individuals to generate a cohesive story to match an emotional theme.

Diary entries are presented as poetic snapshots in the form of six sentences:

Both entries start with the same establishment line randomly selected from a larger list of pre-written sentences preceded by "Dear Diary," (such as: "*I woke up today to the roar of an explosion", "It's been three years since that day*", "*I'm still lost*", "*It started out as a normal Sunday morning*", "*I thought we'd never meet again*").

Five sentences are then generated uniquely for each diary, each line offers an embedded narrative context (such as "*will he ever come back?"* action: *I decided to investigate*, event: *a wedding was taking place nearby*, character: *I remembered our promise*)

A theme/ emotion (ie. *Loss, Joy, Anger, Sorrow*) is generated along with each entry as a gameplay goal for the player and narrative reference. The player must then reorder and exchange sentences within and between the two diaries in order to generate a meaningful story.

I hypothesised through this game mechanic of modularly generating narrative components, many combinations and permutations of diary entries can exist – not to mention the infinite number of unique player interpretations.

Figure 25. First implementation of Dear Diary's core mechanics.

During this stage, I used the software *Twine* [19]to build the branching sentences of the diary entries. However, this proved to be rather limiting – up on playtesting the initial builds, many sentences failed to generate meaningful context.

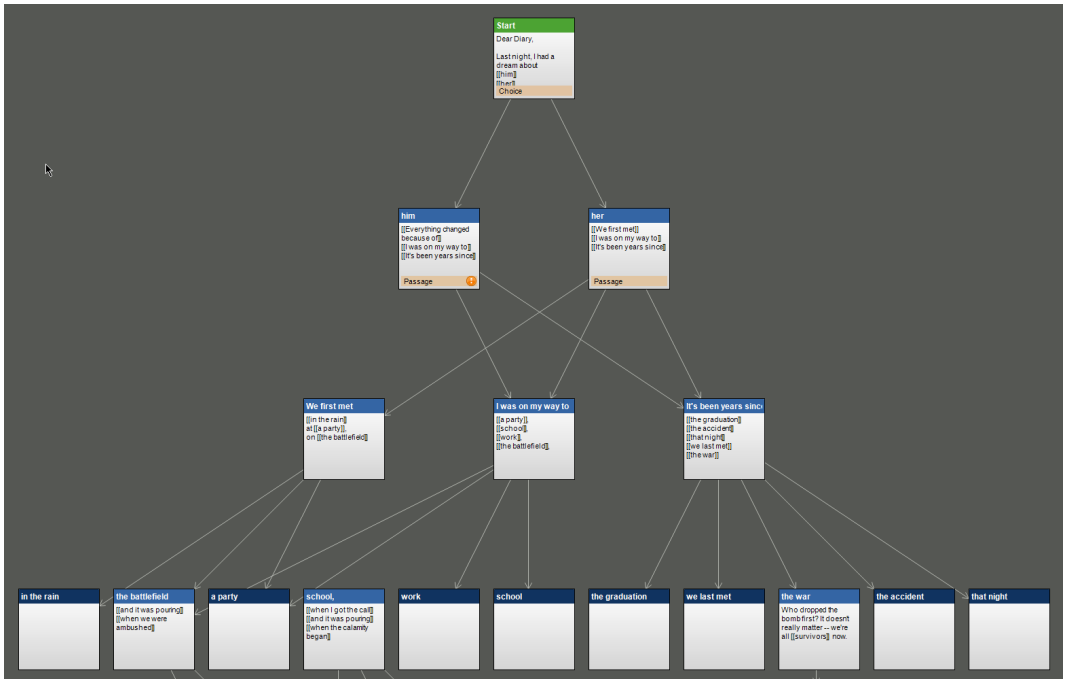

Figure 26. Utilising Twine to link passages together.

[19] Twine is an open-source software for developing branching interactive non-linear narratives.

Furthermore, playtesting also indicated that the random generation of a narrative theme as an interpretive gameplay goal was often ineffective. Due to the modular format, it was common to mix-and-match sentences to create a contextually meaningful diary entry on one side, but often leave the other entry essentially incoherent. Due to this, players could not effectively deduce an emergent narrative and implied relationship between to the two diary entries – undermining the goal of experience.

5.2.4 Dear Diary – Design Process Stage 2

In order to resolve the design issues found in stage 1, I identified two potential solutions:

A. **Remove one of the diary entries and focus on building the narrative experience from the point of view of one character instead.**

I chose not to adapt this solution based on the experience and learnings from the *Dreamdrifter* and *Overclock* prototypes. By having two narrative point of views meant more potential to generate emergent narrative for the player through the interpretation of '*what isn't being shown*'.

A single diary entry means more need for unique sentences to generate meaningful narrative passages. This would rely on further pre-authored sentences – an approach I was looking to improve upon and avoid based on previous prototypes.

B. **Redesign the system of generating diary entry sentences and gameplay goals in order to build a more effective ludo-narrative experience.**

This was the solution I pursued for further development.

I decided to modularise the diary sentence generation mechanic even further, by taking a more advanced linguistic approach.

I broke the sentences into two segments: *Establishing topic* and *Key words*.

Establishing topics would begin the diary entry sentence. i.e.:

It's been three years since…

I still can't forget about…

I had another dream about…

These sentences would be randomly picked upon starting a play through. After which, the player will be given another set of randomly picked potential key words to end the sentence and define the context. i.e.:

…our breakup

…the war

…the wedding

The player would be able to make five choices to create a full diary entry, while the game A.I. will randomly select combinations of establishing topics and key words for the second diary.

This modular process meant I had to also redesign how the game system generated the diary passages. *Twine* integration was replaced by a more flexible spreadsheet database solution:

Locations/ events	Actions	Time	State		Thoughts			
A wedding was taking place nearby.	I awoke to the roar of an explosion.	It's been three years since that day.	I'm still lost.		I never thought we'd meet again.			
	I decided to investigate	It started out as a normal sunday morning.			Will he ever return?			
					I still remember our promise.			
					How long has it been now?			
It's been three years since	our breakup	Everything was	happy		I must	forget		
I still can't forget about	the war	You told me you were	helpless		He/ She told me to	remember		
I had another dream about	the disaster	I felt so	lost			find the answer		
Today was the day of	the wedding	We were so	angry			do something meaningful		
It all started with	the funeral		miserable					
	the kidnapping		amazing		I have to	forget	How can we overcome our	fear
	the roadtrip		uncertain		He/ She told me to	remember	The world is full of	joy
	the launch		weird		Why can't I	find the answer		anger
	our first kiss		jealous		None of us can	do something		doubt
	my graduation		hopeful			change		uncertainty
Last night, I had a dream about	Him	It's been years since	that day		We were so	happy	I loved	our home
	Her	After	the wedding		Everything was	hopeless	That was the last time I saw	my family
			the funeral		At the time I felt so	lost	I miss	everything
			the roadtrip		The past seemed so	miserable	I have to find	our school
			our first kiss		No matter what happens, life remains	uncertain	It took away	my country
			the graduation		He/ she looked	different	I still remember	his/her smile
			our breakup			naive		
			the incident			full of hope		
						scared		
						distant		
						amazing		
						numb		

Figure 27. A more databased structure utilising spreadsheets.

It's been three years since	our breakup
I still can't forget about	the war
I had another dream about	the disaster
Today was the day of	the wedding
It all started with	the funeral
Last night, I had a dream about	the kidnapping
	the roadtrip
	the launch
	our first kiss
	my graduation

Figure 28. Modular sentence generation.

The new system proved much more effective at generating diary passages with contextual basis during playtesting. The ability to manually end sentences also presented the additional advantage of furthering *player agency*, as it actually felt more akin to the real-life process of writing and recalling past memory.

To further this effect, I introduced a coffee cup to the game's interface. This cup served two purposes: from a gameplay perspective, it was a unique visual component that generated the *Key Words* for players to choose. From a narrative angle, it contributed to the feeling of nostalgia, and the personal intimate moment of writing a diary entry. Furthermore, I added visual effects for mist and faded *Key*

Words in, so it would feel like as if memories were metaphorically "floating to the surface".

Figure 29. Redesigned user interface.

However, playtesting also revealed that by letting the A.I. randomly generate the other diary entries often created very jarring and contextually confusing passages. The issue of actually building a coherent emergent narrative between the two diary entries had yet to be resolved.

5.2.5 Dear Diary – Design Process Stage 3

Once again, to solve the final issue of creating meaningful narrative context between the two diary entries – I decided to redesign the sentence generation mechanic.

I did not wish to resort to the more basic solution of limiting the options to more similar settings/ themes as I wanted to offer greater potential for player interpretation.

Based on my learnings thus far, I decided to craft a balance between embedded narrative authorship and emergent narrative creation.

The final system worked as follows:

[System Choice] *Establishing topic* for Character A > [Player Choice] *Key words* > [System Choice] *Follow-up sentence for* Character B

Change Diary

[System Choice] *Establishing topic* for Character B > [Player Choice] *Key words* > [System Choice] *Follow-up sentence for* Character A

Repeat

Players now had to choose and finish sentences for both characters/diaries in a consecutive fashion. The game system will also automatically pick *Follow up sentences* to each *Player generated sentence*, to further flesh out context. This meant a much more complicated process of writing the modular sentences (as each final passage had to be grammatically cohesive) but the final result proved to be much more effective. As the gameplay and narrative designer, I now have more control over this modular narrative generation process, but I am also to write choices and potential system picked lines with more variation in theme/tone/ setting.

	INTRODUCTION LINE		Establishing Topic	Player Choice	Follow up Sentence
Dear Diary,	Last night, I had a dream about	Her	It's been years since	our graduation	We haven't seen each other since highschool.
		Him			Will he/she be at the reunion next week?
					Over the years, we just drifted apart.
					I wish back then I had the courage to tell him/her how I really felt.
					He/ she's been on the news a lot recently.
				we parted ways	I heard he/she finally reached Andromeda two days ago.
					It was the same dream as always, just the two of us under that beautiful starry night sky.
					I'll always remember our last goodbye.
					We were arguing of course, just like back then.
					I wish I could make things right.
				the war began	I heard frontlines were hit with an ambush this morning, I hope he's/she's safe.
					We lost contact after the bombs fell.
					He/She stood alone in the aftermath of battle, hands soaked with blood.
					After the invasion, we were both drafted by force.
					His/Her messages suddenly stopped a few months back. Everyone tells me to prepare for the worst.

Figure 30. The first sentence in modular database form.

Dear Diary begins, with the system generating the titular heading ("Dear Diary") for both diary entries. I then followed this with a very basic introduction line consisting of a simple establishing topic ("Last night, I had a dream about") with two player choices ("Him" or "Her").

This is done for a number of reasons:

1. From a narrative point of view, I wanted to establish right away, that the author of these two diary entries are connected in some way. Do they know each other? How are they related? Perhaps, they both happen to be thinking of one another? Are they separated by time? Or space? These are all questions the player might immediately ponder.

This simple introduction serves to establish *Dear Diary*'s storytelling framework: this is an intimate narrative experience about two people.

2. Secondly, I wanted the player to choose a gender to create an opportunity to build player agency. This process is akin to an abstracted *Character Creation System*. Instead of rolling for statistics and attributes, the player is faced with one underlying question: "who are the authors of these diaries?" Every sentence from this point on is another piece of the puzzle.

   For example, depending on the modular narrative generated, it is often possible to interpret a romantic subtext between the two characters. By allowing the player to first choose the gender of Character A, and automatically displaying the opposite for Character B, gender identity of the two characters can be established.

3. From a gameplay point of view, even though the gameplay now required the player to make choices for the narrative direction of both diaries, I did not want to resort to tutorials which would break the flow of the experience. By beginning the game with a simple establishment of premise and a binary gender choice, I can demonstrate to the player organically through the gameplay how the system operates.

After the *introduction line*, another *establishing topic* is generated. This time, once the player has made their choice, a *follow up sentence* for the other diary is picked by the system. The *player's choice* and the *follow up sentence* work together to create potential for narrative interpretation and emergence. For example, if the player chose to end the sentence "It's been years since…" with "…our graduation", the system might pick to 'write' "Will he be at the reunion next week?" in the other diary. This way, many emergent narrative links can be established in regards to the relationship and history between the two authors of the diaries.

The player is then presented with another sentence to complete. This time, they may pick a choice of being "enemies" or "together" in the past, either of which would drastically change the context of the two character's relationship and push the narrative in completely different directions.

After five sets of questions, the player will be left with two full diary entries, both cohesively meaningful on their own as well as contributing to a larger common narrative.

This very narrative itself – is the emergent '*winning condition'* and goal of ***Dear Diary***.

5.2.6 Dear Diary – Final Touches

To enhance ***Dear Diary***'s core themes, I introduced visually distinctive backgrounds and diaries, to communicate to the player that these are two people separated from one another. A rich, oaken colour palette and slow mellow piano melody all work together to communicate the mood of nostalgia and remembrance I aimed to craft, without the need to resort to menu introductions or tutorials.

Finally, after playtesting, I removed the *'theme/ emotional goal generator'* from the original prototype. ***Dear Diary***'s final ludo-narrative system gives players the opportunity to be directly involved in the storytelling process, and craft a more personal level of emotional engagement.

5.3 Conclusion

Dear Diary has proved to be a successful research and development exercise in generating meaningful computer-game narratives. The final prototype contexturalises effective theoretical and practical game design concepts for the enhancement of computer game storytelling. A few of the key findings will be discussed below:

5.3.1 Ludo-Narrative Design

I determined that the best way to analyse the relationship between games and narrative are not to investigate them separately as different design methodologies but rather two components of a larger interactivity emergent system of interactivity. Through applying key concepts such as *Narrative Play, embedded/ emergent narratives,* and *immersion in meaning*, I was able to conduct my iterative design research and development process under a grounded theoretical framework.

5.3.2 Systems of Meaning

Dear Diary effectively demonstrated this key piece of learning from investigating engrossing *narrative play.*

Computer-games are inherently interactive systems capable of acting as a system of representation of meaning. Engaging narrative contexts can be created from meaningful play by respecting the player's cognitive framework and offering them opportunities to interpret mechanics as emergent narratives.

By adopting a minimalist open approach ***Dear Diary*** achieved this through enforcing the key goals and challenges in the core game-mechanic to support the generation of interpretive stories.

Rather than narrative elements simply acting as a tool to provide context for the gameplay, in ***Dear Diary***, the gameplay goal itself was to use *embedded narrative* as a tool to generate personalized *emergent narratives*.

5.3.3 Iterative Design Process

The iterative design workflow proved to be extremely effective as a methodology for game design, conception and prototyping. By identifying and adapting to both problematic and effective design choices in an agile manner, good ludo-narrative design methods and concepts can be established through repeated testing and implementation.

5.3.4 Efficiency of Minimalist Indie Game Development Approaches

Dear Diary effectively placed the focus on the core pursuit of identifying pragmatic approaches to achieving *meaningful play*. New ideas and design philosophies were quickly fabricated, tested and applied.

This design strategy was instrumental in fostering the concept of ***Dear Diary*** to constantly evolve and improve throughout iterations of rapid-prototyping.

5.3.5 Meta-Communication and Meta-Narratives

Dear Diary, *Dreamdrifter* and *Overclock* all demonstrated that there is a vastly untapped potential in utilizing the meta-narrative space in a computer-game experience. By not shying away from the cognitive framework of a player's engagement with the game system, or attempting to replicate/ replace reality, more nuance can be established for emergent narrative experiences.

This allows the game experience to bring together not only *play* and *narrative*, but also the cultural context of the player's personal experiences and memories to contribute to greater meaning and interpretation.

5.3.6 Final Thoughts

I believe with the utilisation of these effective research and design methodologies will vastly support the process of developing good computer-game stories. The medium of computer-games is constantly shifting, ***Dear Diary*** exists as a reminder that grounded contextual analysis of emerging design practices and adapting to new innovative techniques and thinking will be the key to pushing computer-games further as ***meaningful narrative systems of play***.

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