

Master's Thesis

**Using the Proposed CIMI Method for
Understanding Interactive Narrative in Digital
Games**

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Abstract

In this thesis, we propose a new method for the analysis of interactive narratives in digital games. The method, entitled the “CIMI Method,” is comprised of three steps: a close critical reading to understand the embedded narrative of a candidate text, isolation of a target game mechanic for study via game prototyping, and a player interview phase for understanding the dimensions of player experience with a game narrative. We have applied the CIMI Method to the Namco Bandai game *Ace Combat Zero: The Belkan War* in order to evaluate its effectiveness and contribute to a better understanding of game narratives. We contend that insights gained from the use of the CIMI Method can be utilized for informing game design and increasing the entertainment value of a game, and for further qualifying the medium of games as a narrative art form. Future directions of research in terms of Narrative Game Studies are also introduced and discussed.

Keywords:

Interactive Narrative, Games Studies, Narratology, New Media

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1. Introduction

Since the late 20th Century, video games have emerged as a powerful force in modern human society, and it has achieved this rise in many different and significant ways. As an industry, video games currently earn profits which constantly rival and exceed that of both the print and film industries [1, 2]. As a platform of technology, video games constitute a fervent demand and competition for technological advancement across wide-ranging technologies such as artificial intelligence, user interface, and computer graphics. As an aesthetically-imbued art form, video games constitute a paradigm shift in storytelling. Fueled by the healthy public market demand for video games and enabled by the ever-progressing innovations granted by advancing technologies, video games are steadily approaching the point where they can potentially constitute true instruments of interactive storytelling [3]. In short, video games are both popular and technologically-rich, and both of these factors allow and account for them to be particularly effective at telling immersive, interactive stories—that which is destined to become the digital mythology of our era.

As such, it is also of equal importance to foster rigorous and positive academic investigation of such potent forces in society, such as games. In much the same way that both the print and film mediums have cultivated an ecology of academic inquiry, the medium of games has also followed in this very tradition and has in recent years begun to gather researchers and scholars together who are all very concerned with the significance and implications of the game medium on many fronts. It is in this way that the fledgling field of Game Studies has coalesced [4].

Game Studies (not to be confused with mathematical Game Theory) is the critical academic study of the significance of games (digital and analog) with respect to a wide range of significant fields, from technology and design, all the way up to issues of society and humanity [3, 4, 5]. Currently, the landscape of Game Studies is extremely diverse, and this diversity is actually a reflection of two factors:

The diversity of the game market : The game industry is among other things, an entertainment industry. As such, the need to keep consumers stimulated with seemingly new and innovative gameplay and title options has led to a

high degree of unpredictability and diversity in the landscape of available game titles in any era. This, along with the sudden increase in title releases in recent years which was estimated to be approximately 1,000 titles per week being released globally [6], has exacerbated the issue of Game Studies being unable to keep pace with game production and diversity.

The diversity of the fields utilized to study games : as a new medium which can be thought of as the effective amalgamation of cinematic, ludic, and digital arts, ultimately realized in a myriad of different renderings, games can and have been consequently analyzed in just as many varying ways. Digital games are a new medium. As such, no field of study existed that was inherent to games. Rather, experts from other disciplines began to see in the emerging medium of games, the indicators of significance endemic to their own respective fields. As a result, the people currently involved in Game Studies generally hail from different, but peripherally-related fields such as Computer Science, Sociology, Psychology, Literature Studies, and so on.

In terms of diversity of both subject material and approaches, one would be very hard-pressed to find a field that is more rocky, convoluted, and enigmatic as that of Game Studies, and there are documented precedents which lament this fact, such as in [7]. In fact, most of the currently available research in Game Studies reflects the hybridization of two or more existing fields of research. This is both fitting and proper, considering that games are themselves the synergistic coupling and co-functioning of technology and the human arts. In short, in as many ways as the medium of games tries to innovate, so too numerous and multi-faceted are the ways in which researchers of Game Studies attempt to critically examine games.

1.1 Motivation

While this diversity of both study and material is invigorating, it is ironically also problematic in terms of academic consensus. As a research field, Game Studies is gaining in popularity, but with respect to the nearly 40-year history of the game industry and the popularization and commercialization of the video game in the world at large, Game Studies can seem relatively lagging in progress.

This stems from the diversity mentioned above. With established fields such as Computer Science or Psychology, there are consensuses of taxonomy and agreed-upon models and theories. As Game Studies is still in its relative infancy, such models, theories, and official vocabularies are still currently being formulated and debated. Further exacerbated by the geographic disparity and rarity of those engaged in Game Studies coupled with the ever-changing face of the medium itself, it becomes somewhat evident why Game Studies is slow to progress—the medium, and therefore the field itself, are in a constant state flux.

Perhaps more accurately, considering this particular state of flux as a constant factor inherent to Game Studies at large, it is equally positive to view this period of Game Studies as a time that is ripe for the proposal of new and novel approaches to understanding this enigmatic medium. To that very end, this thesis seeks to propose and demonstrate a new method for the analysis of stories within games.

The study of stories or narratives has historically been categorized and carried out according to the medium in which the narrative is found. For example, the critical analysis of stories found in novels, poems and plays is the field of Literature studies. Subsequently, the study of storytelling in film has become its own field, that of Film or Cinematic studies. This is primarily because both the very form and function of the medium in question will significantly influence the ways in which any given story can be told, and consequently, how it can be critically analyzed.

With games, there is a considerable difference—that of interactivity. Where static media such as print or film which remains unalterable once it is produced and distributed and meant to be enjoyed in a more passive manner, the interactivity of games involves their audiences as active participants, without whom their plots cannot be experienced or even completed. In other words, an un-played game remains in an un-finished state. The critical missing ingredient for the completion of any gaming experience (and consequently any stories therein) lies with the potential player. It is in this very fashion, games constitute a uniquely different and novel form of digital interactive storytelling.

Due to this essential infrastructural difference between the medium of video games and other more conventional forms of media, the ways in which stories

inhabit the digital interactive fabric of games is a question of much debate and conjecture in the Game Studies community. Despite some healthy debate on this very topic in the late 1990s to early 2000s [8, 9, 10], and the somewhat lukewarm consensus which followed [5, 11], the question as to how stories and narratives exist, function, and should be studied still remains considerably open for interpretation. Furthermore, despite the work that has been done in the greater field of narrative in games, cumulative progress is still very preliminary, and there is still a lot of room to grow in terms of understanding aspects of Narrative in games.

1.2 Problem Statement

Modern games are a significant medium in any regard. Furthermore, as an industry, it is experiencing a period of prosperity and growth. However, the ways in which we have to understand the experiences and interactive narratives generated by games are only a scant few. Though work is currently being done to address this, academic consensus on useful methodologies is still considerably evasive. For these reasons, it is necessary to incrementally rectify this lack of sufficient understanding of narrative in games.

The fact of the matter is that humans and narrative are considerably inseparable, and understanding all the ways that humanity uses narrative will be useful for gaining insights into human communication as a whole. It has been reasonably argued in Fisher’s Narrative Paradigm, that human beings narrativize nearly everything that they convey to other people [12]. With games, this narrativization takes on the form of relating their experiences not in terms of what has literally occurred within a given gaming experience (ie moving the chess pieces, pressing the controller buttons, etc), but rather about telling the story of what the achieved and experienced as their avatar in game (ie, ”I struck the dragon with my sword” as opposed to ”I pressed the X button and the game avatar used a sword on the dragon construct on the video screen”). Specifically with games, the recent research of [8] and [10] in the formalism of Ludology, and the subsequent re-referencing of [13] by [14] has led to the rise of the term, ”The Magic Circle” to both reference and account for the phenomenon of player immersion in play at large. In short, this concept of the Magic Circle designates a special abstract

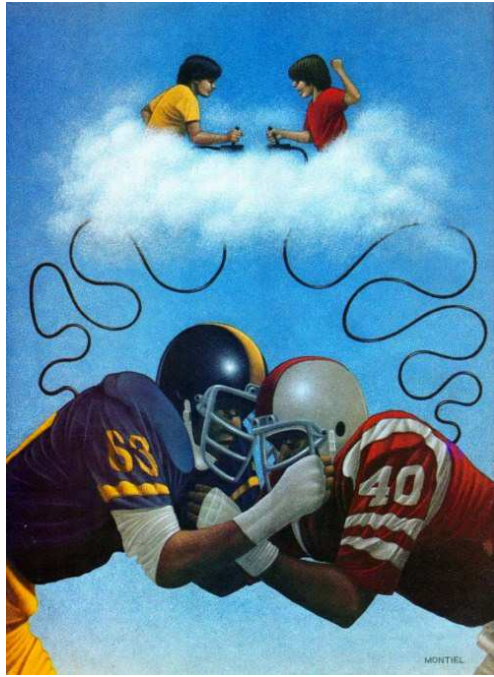


Figure 1. The "Magic Circle," within whose bounds the fictive (non-literal) action of the game occurs. In this illustration, the literal gameplay actions of using a controller to manipulate the action in the game is represented by the two young boys playing at the top, while the fictive action of the football players engaged in a sports match is what occurs within the Magic Circle and is depicted toward the bottom of the illustration.

zone, within whose boundaries the main fictive action of the story takes place, and conversely it is outside the bounds of this Magic Circle that the real world and its literal game-playing actions (pressing a controller button, moving a chess piece) are found. Depending on the infrastructure and function of any given game (digital or otherwise) and the subjective perception of any given human player, the Magic Circle can have varying degrees of presence and scope. With respect to this concept of the Magic Circle, narrativization is then the action which human players carry out when relating to others what had fictively occurred within the Magic Circle of play (Fig. 1).

1.2.1 A Hybrid Medium of As-of-yet Undiscovered Potential

Considering this phenomenon of narrativization and the Magic Circle with respect to games, it then becomes important to understand that games as a dynamic, technologically-enabled medium are currently ideally poised to take center stage as the most ubiquitously widespread, appealing, and potent forms of storytelling and narrativization that human society has yet witnessed. The widespread appeal and market success of social games and casual mobile games is already indicating as much. We contend that games have the very real potential to become the “new classics” of the 21st Century.

To put this into context, the field of Literature has its classics: Homer’s *Illiad*, Shakespeare’s *Hamlet*, Palahniuk’s *Fight Club*, just to name a few. With Cinema, experts point with ease to Welles’ *Citizen Kane* and Kubrick’s *A Clockwork Orange* when asked to name their classics. With the newly-emerging medium of games, it is easy to know which titles sell well or which ones were universally lauded by critics, such as Kojima’s *Metal Gear Solid* series or Bethesda’s *Elder Scrolls* series, but understanding how these games qualify as narrative classics will go a long way towards further qualifying the medium for future generations. As the phenomenon of Oral Tradition was utilized by prehistoric man as a means to convey cultural traditions, meaning, and values, so too does this potential exist in the modern medium of digital games. In other words, we dare to contend that the children of the future will receive their ideals of heroism not from merely reading the epic legend of *Beowulf* as much as they will from becoming Link in the *Legend of Zelda*.

Having claimed as much, we subsequently contend that not only is it important to understand how games can potentially achieve this high level of narrative quality, but also that this is an inherently good and beneficial thing. To that end, this thesis endeavor is a tentative yet bold step which takes the form of a proposed methodology for a more comprehensive understanding of game narratives, tentatively-titled the CIMI Method.

In our application of the proposed CIMI Method to investigate the narrative and gameplay aspects of *AC0*, the rest of this thesis is organized as follows: Chapter 2 will introduce and discuss the academic work that is related to Game Narrative Studies. Chapter 3 will formally introduce and explain the CIMI Method in

detail. Chapter 4 constitutes the Close Critical Reading phase of CIMI. Chapter 5 introduces both the second step of the CIMI method for isolating the target game mechanic (SNM), and the third CIMI phase which is focused on the individual player Interviews. Chapter 6 will show and discuss the results of the Mechanic Isolation and Interview experiments carried out, while Chapter 7 concludes this thesis. A hefty Chapter 8 will discuss the remaining future work as well as the potential research directions and opportunities that may come from this effort.

2. Related Work

This Chapter will briefly introduce and discuss the research landscape of Game Narrative Studies. Though the field itself is relatively young, there still exist significant efforts towards understanding narratives in a digital interactive game. We will begin with a summary of the history of narrative in games, and then introduce the two main schools of thought regarding narrative in games, namely that of Narratology and Ludology. From this point, we will discuss the lacking areas in order to lead into a discussion of how we propose to address the gap.

2.1 A Brief History of Narrative in Games

The beginnings of the video game are contentious things. The inability of experts to pinpoint a historical starting point with any degree of consensus belies fact that the very definition of what constitutes a "Video Game" is actually still being debated, though this is not to say that this is necessarily a bad thing, as contentious, continually-debated definitions abide within a variety of disciplines. Rather, it is important to remain aware that the definition is a living, growing thing with the potential to change as the medium evolves, accordingly.

To illustrate this point, some experts believe that it was Tennis for Two, William Higinbotham's playful re-tasking of an oscilloscope to render an abstracted game of tennis in 1958 which counts as the first video game (as it was a digital game rendered using raster graphics)[15](see Fig. 2), while others point to even older examples of electronic amusement such as Thomas J. Goldsmith Jr.'s 1947 patent for a "Cathode Ray Tube Amusement Device" (Fig. 3), though this device was never produced, marketed, or sold [16]. Still others point to Spacewar which was rendered on the DEC PDP-1 at the Massachusetts Institute of Technology in 1962 (Fig. 4), since this game was later commercialized [17].

If the condition of "First Video Game" is related to marketability, then many will argue that the commercially-successful 1972 release Atari's Pong signaled the beginning of video games in the greater societal awareness at large [18].

Even as far back in video game history as these examples are, even examples such as Spacewar and Tennis for Two have some degree of related contextualization—backstory which serves to give narrative-like meaning to the game activity for po-

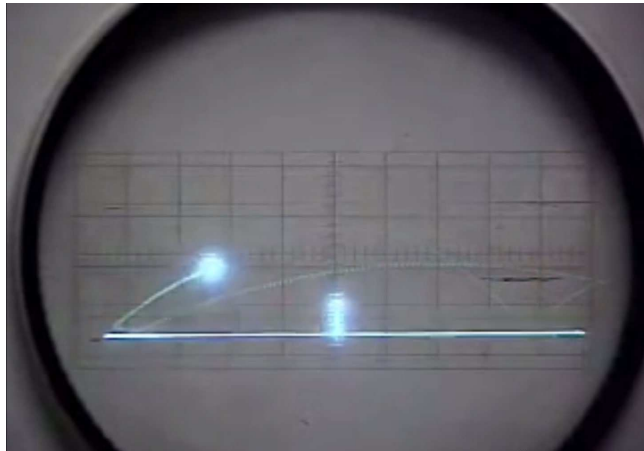


Figure 2. A screenshot of the oscilloscope used to render Higinbotham's game/demonstration Tennis for Two (1958)



Figure 3. The Cathode Ray Tube Amusement Device, originally conceived and patented in 1947. Going by the nomenclature alone, one might feasibly argue that this is the first "Television Game"



Figure 4. Spacewar as rendered on the DEC PDP-1 at MIT (1967)

tential players. With *Tennis for Two*, the literal nature of a modified oscilloscope is reframed as an abstraction of a simple game of tennis. With *Spacewar*, vector and raster renderings of pixels responding to sine and cosine patterns are instead recontextualized as an epic space battle between two alien factions. Having cited as much, it can be seen that even with these early examples, the phenomenon of narrativization has remained inherent to the very nature of digital games.

Of course, these recontextualizations and narrativizations predominantly existed for those early games as material external to the actual game. These often took the form of arcade box art, or a small narrative textual blurb written somewhere in the accompanying materials which come with the sold versions of a given game. For example, these stories are often found within the instructional manuals of many Atari-era games [19]. Despite the fact that modern technology has enabled the bulk of the narrative responsibility to exist within the gameplay itself, this practice still remains even today.

By the time Nintendo began to experience commercial success in the home video game market in the United States in the 1980s, video game technology had progressed to the point where narrative and context could be told within and as part of the gameplay of a given game [20]. With the advent of the modern digital role playing game (and arguably the first commercially-successful Japanese role



Figure 5. The original Pong gaming cabinet as it would have appeared in bars and later arcades. Atari's Pong is considered the first truly commercially successful video game (1972).



Figure 6. A screenshot example of the pseudo-Elizabethan English dialog in Dragon Warrior (Enix, 1986). Many games released during this period began to take a narrative shape. While the dialog in Dragon Warrior was evocative of the older, more conventional storytelling medium of literature, the translation choice proved strange to Western players.

playing game outside of Japan, 1987’s Final Fantasy for the Nintendo Entertainment System), story-centric games began to more closely resemble conventional narrative media such as film. Another example of an early story-centric game from the Nintendo-era was Dragon Warrior (titled “Dragon Quest” in Japan)(1986). In the case of Dragon Warrior, the character dialog was translated into a kind of antiquated, pseudo-Elizabethan English form (see Fig. 6), which gave the game a Shakespearean feel, thereby (perhaps accidentally) evoking both the fantasy imagery that the genre of RPG is known for often adopting, and implying ties to the older, more classical storytelling medium of classical literature. Unfortunately for Dragon Warrior, this localization anomaly only served to alienate Western audiences [20].

Since the advent of the home-console era in the 1980s, story-centric games have only continued to evolve and grow in popularity. With the debut of next-generation home gaming systems such as the Sega CD (1991) and the Sony Playstation (1994), games media transitioned to the Compact Disc format and there was a strong trend toward the development of games in 3D. In particular,



Figure 7. A screenshot from the game Warhawk (Sony/SingleTrac, 1995). Like many of its contemporaries, Warhawk made very liberal usage of pre-recorded full-motion, live-action cinematics in order to convey the majority of any embedded narratives the game had to offer. The effect was that games were trending towards and evolving further into being considered a narrative medium.

with many Playstation-era games, developers had a habit of relying on the storage capacity of the new CD format to incorporate full-motion videos into games, thereby furthering the evolution of storytelling games and resembling the medium of cinema even more, as displayed in Fig 7.

Currently, game technology has allowed for an effective amalgam of varying storytelling techniques which can potentially employ narrative mechanisms from both literature and film, alongside the ever-evolving technology of digital 3D animation. In fact, it is this very technology which is enabling the storytelling power of the game medium to excel in modern society.

So where can we begin? In terms of narrative in games, two semi-competing (yet very interrelated) perspectives arose and came into brief contention with each other: that of Ludology and Narratology. Each of these sub-branches of Game Narrative Studies will be discussed in the subsequent Chapters.

2.2 Narratology vs. Ludology

The late 1990s saw the formation and academic-sparring of two semi-competing philosophies regarding stories and narratives in games: Ludology vs. Narratology.

Put simply, Narratology was a general approach to investigating the ways and possibilities of storytelling using digital games [5], whereas Ludology developed as a response to Narratology, contending instead that games should be understood not by the narratives found within them (which Ludology argued were merely incidental), but by the formal systems and rules which made the medium games in the first place [21].

In appropriate terms, Narratology is essentially the academic study of narratives. The definition of the field is intentionally broad, as the media which simultaneously utilize and are constituted by narratives is forebodingly broad as well. In terms of this thesis, the type of Narratology that is of particular importance is that of Literary theory, criticism, and interpretation. For instance, in much the same ways that the works of Plato or Shakespeare might be studied, analyzed and interpreted, so too may video game stories be similarly deconstructed in order to search for potential dual meanings hidden in the layers of any given narrative. That is to say, the reader is always inherently free to interpret a story in any way they wish [5, 7, 22].

It then follows that as video games and the narratives contained therein are produced as creative endeavors, it seems logical to want to apply similar analysis methods to games in order to search for and understand any deeper meanings which may be present there. However, as video games are fundamentally different from static media in that they require a significant level of user interaction of participation in order to experience them, the current methods used for understanding and interpreting narratives in static media are admittedly both insufficient in their current forms and requiring some amendments before they can be meaningfully applied to game narratives [8]. This is one of the reasons why Ludology came into being.

Ludology contends that simply using the toolset from a different field (that of Literature Studies, as early Narratological efforts attempted to do) to understand a new digital medium is both insufficient for the task of understanding that new medium [5, 21] and, to some degree, an act of academic imperialism, where one field attempts to expand its territory and reach by including new types of media in its research scope, thereby "colonizing" and assimilating it [22]. Where Narratology would look critically at the stories of the games, Ludology focuses

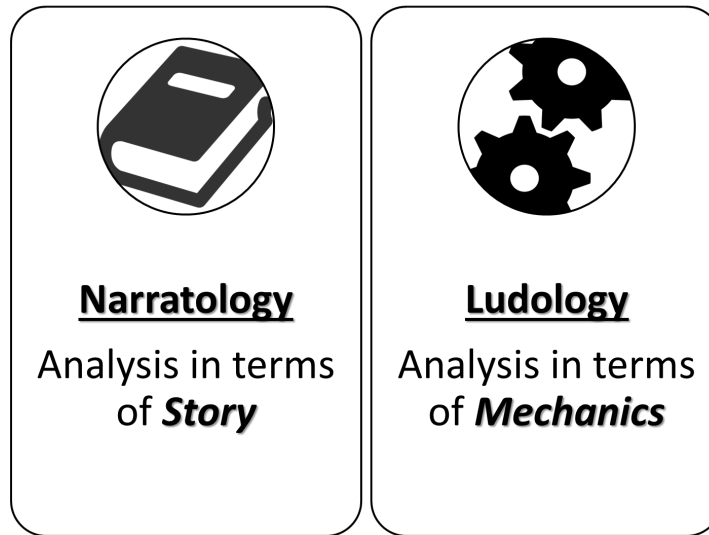


Figure 8. Narratology and Ludology at a glance. Where Narratology borrows heavily from Literary Studies and focuses on a story in terms of itself, Ludology has attempted to distinguish its novelty by focusing on story in terms of game mechanics.

primarily on the formalism of games. That is to say, where a Narratologist would study a game as though it were a story, a Ludologist would analyze the game as a game, where a game is comprised of a formal set of rules, to which any perceived narrative may in fact be emergent or simply incidental [8, 21].

2.3 Current State of Narrative Game Studies

By the late 2000s, this academic “debate” had all but died away, as experts on both sides seemed to agree that there was still room for both disciplines to expand without impeding the progress of the other, or in other ways, both parties seemed to regard the other as distinct, no longer in direct contention, and for all intents and purposes recognized the conflict as a mutually-beneficial “non-debate” [8, 11, 23, 24]. This notion is further reinforced by the decrease in academic work which dealt directly with the so-called battle between Narratologists and Ludologists. Still, this historical development in the study of narratives and

stories in games leads us to the meat of the study presented here, in which the chief concern is how best to research and understand narratives which exist in games.

2.4 Towards a More Comprehensive Methodology

Based on both the complexity of the hybrid story/gameplay nature of digital games and the still plastic nature of the field of Game Narrative Studies, in order to understand and research narratives present in and rendered through games, it will be equally important to adopt a multi-disciplinary approach. Furthermore, we contend that a multi-pronged approach to understanding story in games which references the strengths of Ludology and Narratology from Game Studies is needed for an understanding of the embedded narrative of a given game. Additionally, as digital games are by form and function a medium borne by and consisting of technology, an objective, quantitative approach should also be insightful.

Furthermore, it is interesting to note that while both Narratology and Ludology have made sufficient strides in understanding game narratives in terms of the story itself and in terms of the game mechanics (respectively), there is a somewhat ominous lack of discussion regarding understanding the narrative experience of a game as it is experienced by the Player, as is displayed by Figure 9.

This sentiment has been echoed in the Game Studies community by [25], which contends that:

- Games are not a static phenomenon. Rather, they are a process that can potentially render a different experience upon every single play iteration. Singular, unified experience between players, while not impossible, cannot be assumed. Every play through is potentially a different experience.
- Considering this, it will be then necessary to collect various player experiences when it comes to methodologies surrounding narrative in games. [25] offers various sources for data collection such as official game websites and player forums as potential sources of data for understanding the experience of a game narrative.

- Furthermore, these external data sources are to act as multivariate supplements to the core analysis, which [25] contends should be the researcher's original playthrough experiences.

For the purposes of our study in this thesis, we also felt it necessary to consider all of these factors in formulating a methodology for analyzing game narratives.

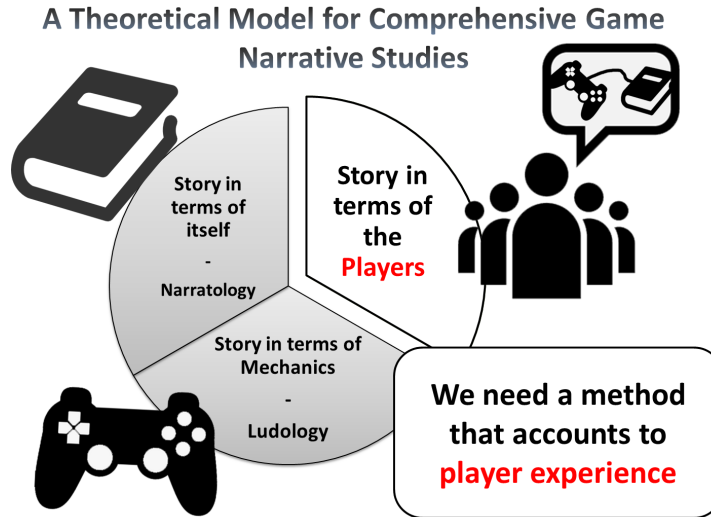


Figure 9. A theoretical model for comprehensive insight in game narratives. Unlike conventional models of understanding, the new model places more of an equal priority on understanding game narratives as they are experienced by Players.

3. The CIMI Method

Based on these principles, for the purposes of our study, we have devised the “CIMI Method” (pronounced “See-Me”)—a multi-disciplinary approach to understanding narrative in games which utilizes:

- **The story-focused strengths of Narratology:** One definite advantage that a Narratologist has at their disposal is that they can potentially choose from a wide variety of time-tested precedent methods to analyze any given narrative with. As narrative mediums tend to be inherently diverse, this wide selection of analytical tools is appropriately handy, allowing Narratologists the freedom to choose the appropriate literary analysis method for the particular candidate text. Having cited as much, we decided that we would like to invoke that very strength and flexibility of study into our CIMI Method.
- **The game-mechanic analysis methods of Ludology:** Although Narratology has an advantage when it comes to story analysis in and of itself, the field admittedly borrows its myriad methods from parent disciplines which are essentially tasked towards the analysis of static print or visual media. Any meaningful analysis of a narrative delivered via the dynamic processes of a game must necessarily consider how the narrative is informed and created by the mechanics of that system. As such, for the CIMI Method to fulfill this requirement, we take the strengths of the game mechanic analysis methods pioneered by Ludology for a more comprehensive understanding of the narrative phenomenon rendered by dynamic games.
- **The solicitation of actual player experiences:** While a well-rounded, meaningful game narrative analysis is certainly served well by incorporating those effective parts of both narrative interpretation (Narratology) and game mechanic analysis (Ludology), as we contended above, an essential missing component for fuller understanding of the game narrative phenomenon will be the voices of the players, for it is through the players that the game narrative is both expressed and completed. No game narrative is complete without the players who provide the active input necessary

to drive and complete the formation of the game narrative experience. If, for example, one were to neglect considering wholesale player experiences, we contend that that analysis may only be meaningful to a point. We wish to consider this third dimension of player experience as both an advantageous and essential resource for the understanding of interactive digital narratives.

The CIMI Method that we propose has been constructed around these ideas and factors which we believe to be indispensable for narrative analysis in games. The CIMI Method stands for:

1. **C**lose **C**ritical Reading: In this phase, we designate a singular Candidate Text (game) for study. The criteria for game selection can be tuned by the researcher. For the purposes of our study, we have designated the Namco-Bandai, Playstation 2 game Ace Combat Zero: The Belkan War (AC0) as the Candidate Text. AC0 was so selected for this trial of CIMI due to its heavy and pervasive narrative elements which are highly atypical for games of its "flight shooting" genre. Furthermore, these narrative elements hold up well when scrutinized for literary quality, as was demonstrated in [26] and [27]. With AC0, the special relationship between the Stealth Narrative Mechanic (SNM) and the incremental development of the narrative in the game was textually analyzed, and the results of this analysis discussed in Chapter 4 of this thesis. After selecting a trait to investigate (in this case, the SNM of AC0), we can then move on to Step 2 of CIMI, which is the Isolation of the target game mechanic.
2. **I**solation of **M**echanic: In order to better understand the target mechanic and resulting experiential phenomenon in a time-feasible manner, the second step of CIMI involves creating a prototype mini-game which is essentially the target game mechanic of the original Candidate Text, stripped down and rendered as an experimental facsimile. It is not feasible to collect player data from only players of AC0, which is a 20-hour game. Instead, we built a smaller game that only takes an average of 5-minutes to complete. This mini-game is then followed by a research survey used to collect the necessary data. While this step is going on, researchers can concurrently

begin Step 3 of CIMI, which is composed of Player Interviews.

3. **Player Interviews:** While Step 2 of CIMI is designed to isolate the target mechanic for more expedient, wholesale data collection, Step 3 of CIMI is focused more on in-depth, exploratory textual analysis of actual player experiences with the original Candidate Text. In other words, it is highly necessary to grab the opinions of the actual players of AC0 and explore their opinions of their gaming experiences. Analysis of their answers in this regard will be helpful in filling out the Player Experience dimension that was absent in the model we proposed in Fig. 2.7.

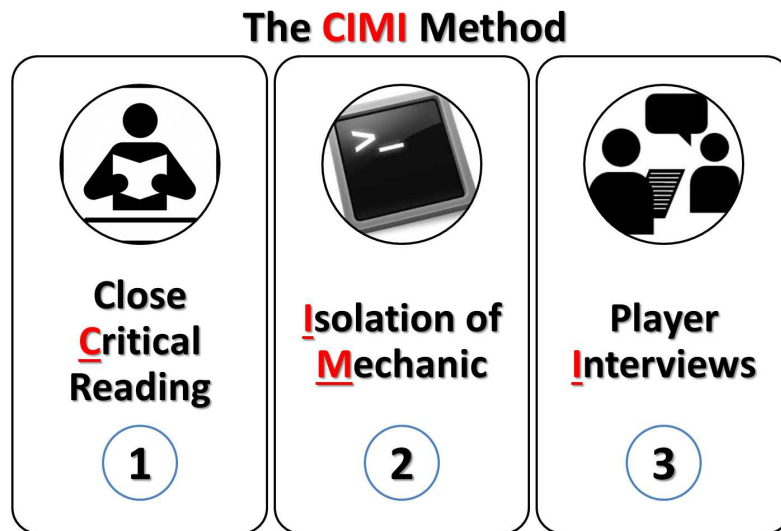


Figure 10. The CIMI Method Explained. In Step 1, a Close Critical Reading is conducted on a Candidate Text, and it is analyzed using Narratological methods in order to designate the target study phenomenon. In Step 2, the target phenomenon/game mechanic is isolated in the form of a short, time-feasible mini-game prototype which can be distributed on the internet for data gathering using a custom research survey. In Step 3, Players of the original Candidate Text are interviewed for their opinions and experiences of the Candidate Text.

4. Ace Combat Zero: A Case Study in Game Narrative

The critical study of Narrative encompasses a wide and vast array of possible avenues of investigation. Based on the research that has preceded this thesis, the critical study of narrative in games is equally sprawling. For our purposes, we found it necessary to narrow our field of study down to the narrative landscape presented in a single game example, namely Namco-Bandai's 2006 Playstation 2 Title "Ace Combat Zero: The Belkan War" (AC0) Using this singular example as our basis of investigation, we set about examining the narrative facets of this particular game in a deep and critical way, as outlined in the subsequent chapters. For this Chapter, a close critical reading will be applied to the source material of AC0. For the purposes of this reading, we treat AC0 the game media as a text which can be read and interpreted for meaning, akin to the way static, conventional texts are often analyzed in the field of Literary Studies [26, 27]. Specifically with this close critical reading, AC0 will be scrutinized as a case study for the following:

- Literary Content
 - the presence of conventional narrative devices (as they are often found in classic literature),
 - literary symbols and their potential meanings

Furthermore, this close critical reading will also scrutinize AC0 for the following ludic (game/game mechanic) elements as they pertain to the telling of the story:

- the identification of game mechanics which contribute to storytelling
- understanding of how those mechanics function in order to render the story of AC0
- evaluation of the effectiveness of said mechanics (extrapolating the potential of the mechanic if applied to other games)

In applying a close critical reading to AC0 and searching for the aforementioned points, we can provide a good starting point for analysis and hypothesization in terms of how to open up the game for more objective, quantitative analysis.

4.1 Ace Combat Zero: The Belkan War (AC0)

Namco’s Ace Combat Zero: The Belkan War [28] is a peculiar Flight Shooting/Flight Simulator game, as far as games of this particular genre are concerned. This is due to its rich depth of story which serves as the context in which the gameplay is conducted. Woven between and blanketing the entirety of the gameplay is an over-arching narrative that contextualizes the gameplay of each battle as an individual unit of a story which inhabits ten fictional years and can be potentially viewed from a myriad of perspectives. This is quite a lot to throw at the average fan of a Flight Shooting game who may just looking for the simulated experience of supersonic dogfights.

In order to tell its story in the aforementioned way, AC0 employs a literary device called Frame Narrative, also known as Nested Narrative, which can basically be thought of as a “story within a story” [29]. At various points in the game, the player’s performance will be ranked according to an aggression scale dubbed the “Ace System.” Depending on a player’s given ranking at certain key points in the game, the game’s narrative will incrementally change according to that player’s Ace rank. While Frame Narratives, Multi-Story-Path (MSP) games and Narrative Choice Systems (NCSs) are not uncommon in modern games, AC0 represents something unique in terms of the literary device and both of these game mechanics. Unlike other examples, AC0’s MSP narrative evolution system is sufficiently subtle, almost to the point of being covert. For the purposes of this study, we will be referring to this entire setup (literary Frame Narrative + covert, subtle MSP gameplay) as the Stealth Narrative Mechanic (SNM), which by its very nature, is mostly hidden yet integral to the development of narrative gameplay instances within AC0.

In order to further understand the SNM of AC0, it is necessary to conduct a close critical reading of AC0 in order to discuss and analyze the unique SNM storytelling mechanism in detail. In particular, there are certain peculiar things occurring within the example game of AC0 which need to be addressed in order

to get a handle on the way Narrative exists and functions in this game:

- The game is carried out by having the player transition continuously between two states, that of the gameplay state and that of the narrative cinematic state. In this way, the narrative experience of AC0 constitutes what is known in Literature Studies as “Frame Narrative,” which in the case of AC0 is both tailored to the player and experienced as a whole.
- Using a measure and ranking of player aggression in the game’s Ace System, the game mechanic offers the player one of three different narrative chapters during narrative cinematic states, depending on the player performance, which is categorized into three types of “Ace Ranks” (that of Knight, Soldier, and Mercenary, respectively). In this way, the narrative experience of each playthrough can be potentially different and unique, depending on how aggressively the player chose to play the game. Evaluation throughout the course of the game is fine-grained in the sense that the player is being graded upon the successful completion of every mission in the gameplay state. As such, both the Ace Rank of the player and the consequent narrative they witness during the narrative cinematic state have the potential to adjust to the player incrementally.
- The nature of the SNM is very subtle, almost to the point of being somewhat hidden. That is to say, the way this game mechanic functions to tailor the story to the player is not overtly mentioned within the context of the game (though it is briefly explained in the accompanying paper instruction manual booklet which came with legally-acquired copies of the game disc). The stealth-nature of this mechanic is of particular interest to us, as we contend that hidden systems like the one employed by AC0 can be potentially effective for tailoring interactive narratives to players.

By examining this ecosystem of game interactivity and narrative plasticity as it exists in AC0, further insights can be gained into critically understanding how narratives exist in the new medium of games.

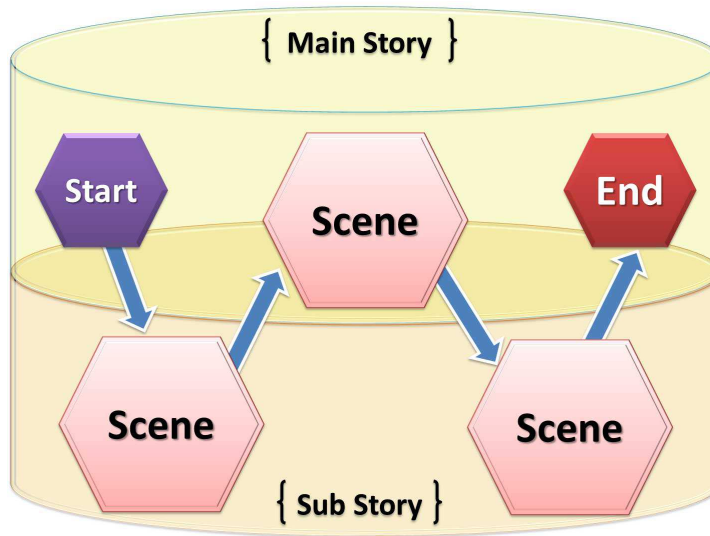


Figure 11. Conventional Frame Narrative Structure

4.2 Mission Briefing: A Background of the Narrative of Ace Combat Zero

To begin our examination of AC0, it is necessary to understand the type of narrative that is present there. In this case, the narrative of AC0 constitutes a common literary mode called “Frame Narrative.”

4.3 Frame Narrative in Conventional Media

As mentioned prior, Frame Narrative is basically a “story within a story.” It is a literary device employed by numerous authors since time immemorial to convey stories and to steer the reader’s attention in a particular way or as a method to establish metaphors [29]. Examples of Frame Narrative can be seen very readily in all forms of storytelling media, such as in literature (ie The Odyssey [30], Frankenstein [31]) and cinema (ie. The Princess Bride [32], Inception [33]), among others. Figure 11 displays a conventional Frame Narrative structure.



Figure 12. The destruction of Cloud’s hometown, told as a flashback.

4.4 Frame Narrative in Games

Frame Narrative fits in very comfortably in the medium of video games, and commonly manifests as side quests which illustrate some aspect of the story that is not accessible if one remains in the central narrative. Frame Narratives can be found in games such as Final Fantasy VII [34] and Starcraft II [35]. In such cases, Frame Narrative is employed as a means to elaborate on a story that one of the characters is telling within the context of the greater game (story within a story) by allowing the player to take up a the role of a different character (or different version of that character) temporarily. With the case of Final Fantasy VII, the player actually plays through protagonist Cloud Strife’s flashback which tells the tale of the destruction of his hometown (Fig. 12). In Starcraft II, the player can temporarily play as the Dark Templar Zeratul (a supporting character) in missions which constitute the side-story of a dark, alien prophecy (Fig. 13). In both of these cases, Frame Narrative offers players a very direct, hands-on way to experience several dimensions of the central narrative of a game by allowing players to go a level (or two) deeper than the outermost layer of the narrative. Conventionally, it is this outer layer that is both the central (main) narrative and the realm involving the most gameplay.



Figure 13. All the “Zeratul” missions take place as sidequests which are experienced by protagonist Jim Raynor, and consequently, by the player

4.4.1 The Frame Narrative of AC0

The Frame Narrative construction we see in AC0, on the other hand, is interesting in the sense that, unlike the aforementioned examples, it is the inner story which constitutes the totality of the game play, and the outermost layer of the narrative manifests as a wholly non-playable array of cinematic cutscenes.

The story in the outermost layer of AC0 is framed as a documentary television program produced by an unnamed investigative journalist. According to the narrative, while uncovering the secrets of the eponymous Belkan War that occurred ten years prior, he comes across frequent references to a mercenary fighter pilot who exerted significant influence during the war, whose reputation and skill are unparalleled. While the name of this pilot remains unknown, they are continually referred to by their fighter pilot callsign, “Demon Lord.” Inspired by this new vein of evidence, the journalist begins to investigate the stories surrounding the Demon Lord in an effort to tell the story of the greatest fighter pilot of the war. Ultimately, despite the journalist never actually finding or meeting the Demon Lord in person, he does succeed in interviewing nearly all the pilots shot down in battle by the infamous Demon Lord. It is through these interviews (presented in the form of cinematic cutscenes) that both the narrative context and portrayal of the Demon Lord is constructed.

By contrast, the inner layer of the Frame Narrative of AC0 consists of the

events which occurred ten years prior during the very war which the journalist in the outer narrative is investigating. The player assumes the role of the Demon Lord himself, and this section of the game constitutes the actual historical missions (relative to the game fiction) which the Demon Lord undertakes and are therefore the portions of AC0 which can actually be played by the player. During these missions, which are more typical of Flight Shooting type games, the game is constantly measuring the aggressiveness of the player. During each of the game’s missions, a player is free to

1. destroy just the mission-designated targets,
2. destroy anything they can target with their fire control systems, or
3. perform some combination of the prior two actions.

It is these actions (or varying combinations of these actions) which act as the indicators for the game to rate the player’s aggressiveness. That is to say, an excessively-aggressive player can be considered one who downs anything in sight, whereas a scrupulous player is one who focuses only on mission objectives, ignoring all extraneous (yet destructible) agents/objects. After the successful completion of each mission, the game ranks the player according to the Ace Ranking scale of aggression with the “Mercenary” end of the scale indicating the “Most Aggressive Play Style” and the opposite “Knight” end of the scale signifying the “Least Aggressive/Most Focused Play Style.” All other designations between these two extremes fall somewhere on the so-called “Soldier” gradient, representing varying degrees of balance between Aggressive and Focused Play Styles. This Ace Ranking gameplay mechanic is displayed in Figure 14, and plays a very important role in terms of the overall Frame Narrative of AC0.

The game bosses of AC0 arrive in the form of enemy Ace squadrons which are considerably more difficult to defeat than the majority of the other enemies within the game. Furthermore, the Ace squadrons which the player will face at designated points in the game vary according to the player’s aggression classification at the time of the encounter [28, 36]. For example, at the first of these Ace engagements, a player with an extremely aggressive rank of Mercenary will find themselves facing the “Rot” Squadron. By contrast, Knight-ranked players will

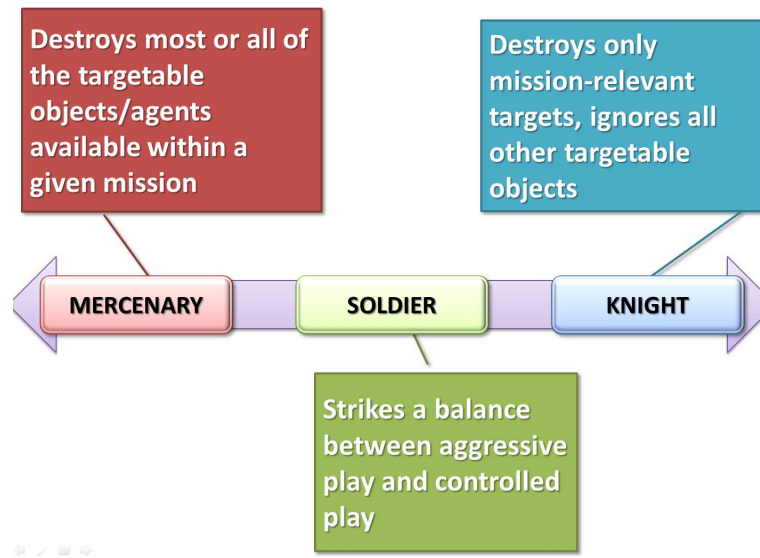


Figure 14. The Ace Ranking Aggression Gradient Gameplay Mechanic of Ace Combat Zero

be confronted with the similarly-styled “Indigo” Squadron, and Soldier-rank players will have to try their mettle against the evenly-balanced “Grun” Squadron.

The canonical history of AC0’s story is constructed in this very fashion—successfully defeating an enemy Ace squadron essentially means that the Demon Lord (the Player Character) has shot down that person during the Belkan War, and consequently, during the documentary frame of the game narrative set 10 years later, it will be that particular enemy Ace’s testimonial that we as players/audience members will witness during those cinematic cutscenes. This play mechanic manifests at several key points in the game, and it is possible for a player who begins the game as a certain type (Mercenary/Soldier/Knight), to change their gameplay/aggression style multiple times throughout the course of the game during the innermost narrative layer, thereby creating a wide variety of narrative portrayals of the Demon Lord character in the outermost layer of the narrative.

As described in Fig. 15, what this primarily means is that the Frame Narrative of AC0 is a reactive relationship between the actions of the player in the innermost

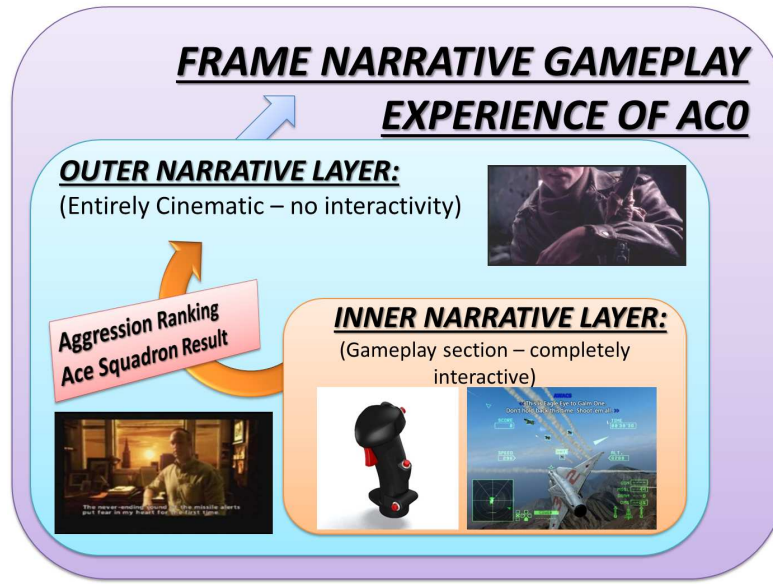


Figure 15. The Overall Frame Narrative Gameplay Experience of AC0

narrative layer (gameplay layer), and the reactions of the outermost narrative layer (narrative layer) to make changes to its structure based on the aggression level of the player upon each successfully- completed mission. As a whole, AC0 progresses in a back-and-forth manner between these two layers of narrative, telling the story of the journalists’ efforts to investigate the myths and portrayals of the Demon Lord in the outermost layer, and allowing the player to “tweak” and fine-tune that portrayal via the gameplay sections of the innermost layer (Fig. 16).

4.5 Frame Narrative between Conventional and Interactive media

Authors of conventional literature make use of Frame Narrative to exert a unique control over the setting of their story in order to guide the reader’s attention to something within the story that is of particular note. In the aforementioned example of Mary Shelley’s 19th Century Gothic fantasy novel *Frankenstein*, Shelley

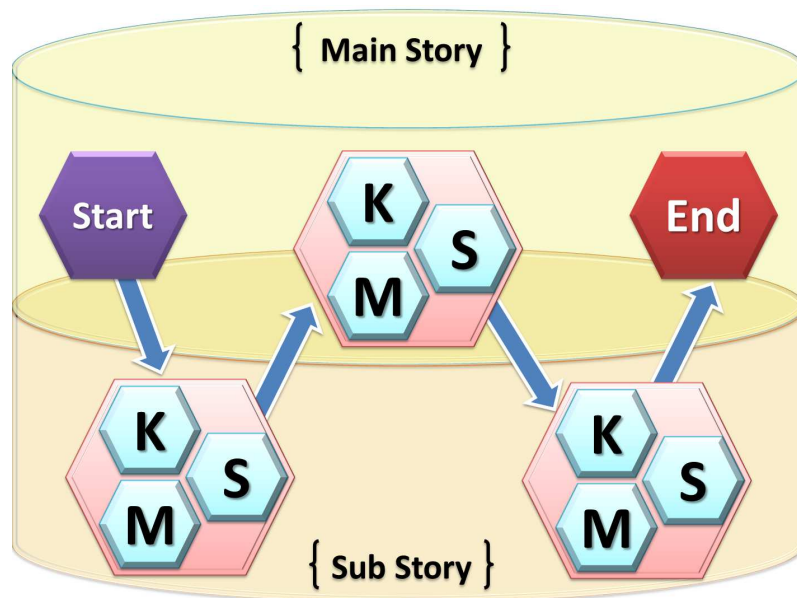


Figure 16. The conventional Frame Narrative Model modified to show the effect of Ace-Ranking-based story branching in AC0

uses Frame Narrative in one important instance (out of many) to illustrate the world of the monster and his perception of it [31]. At this point in the novel, the narrative transitions the frame border from Victor Frankenstein's personal account of his pursuit of the monster to the monster's own personal account of his wretched life up to that point. By enabling the reader to hear the monster's tale from his own mouth and in his own words, this construction affords the readers very direct access to the perception of the monster. In this case, the use of Frame Narrative here is to give the reader a much more direct, first-person account of the short life of the monster up to that point in the narrative, and in doing so, help to more quickly establish some sense of sympathy for that character.

Per the writing conventions of Homer's time, *The Odyssey* [30], begins as the tale of a bard who relates the story of Odysseus. Within the context of the bard's story, the protagonist Odysseus then begins to tell his own story in his own words. This point constitutes the narrative shift from the bard's narrative layer to Odysseus' narrative layer. Furthermore, it is in this layer of the narrative strata that the majority of *The Odyssey* is conveyed. In this manner, we as readers get the story straight from the source, so to speak. We are privy to Odysseus' thoughts and actions as related to us directly by him. The Frame Narrative construction of *The Odyssey* allows this direct connection to take place and affords us as readers a unique insight into the very worldview of the protagonist.

In other words, Frame Narrative can be effective in traditional printed literature as a potent device for guiding readers to the more pertinent aspects of a story. However, Frame Narrative in fixed, static media is fundamentally an authorial agency. More specifically, with printed media, the choice of whether or not to use Frame Narrative, and how to use it, are all questions that remain solely within the jurisdiction of the author of that work.

By contrast, in the dynamic medium of video games, Frame Narrative construction can be employed in order to pass along a considerably degree of authorial license to the player. In the case of *AC0*, Frame Narrative is used by the gameplay mechanic to allow the player to decide (whether purposefully or not) which portions of the narrative get told, and by extension, this then points to which areas of the narrative are important to the player. In a sense, the narrative of *AC0* actually reacts to the player interaction (specifically, the degree of aggression

of the player) and through the course of the playthrough, will mold its narrative content to present the player with a portrayal that is befitting and reflective of that particular player’s style of play. In passing the authoritative control to the player in this fashion, we contend that the Frame Narrative of AC0 achieves the following storytelling benefit.

4.6 A Tailor-made Story through SNM

The unique advantage afforded by the SNM of AC0 is that it allows for a much more subtle and intuitive way to fit the narrative to the player. Since the AC0 blackbox is always grading the player during the mission portions of the game, it can be thought of as constantly observing the player and making data-based inferences on their playing style. In constantly ranking that player on the Knight/Soldier/Mercenary scale, the game mechanic itself is always monitoring just what sort of player is in the pilot seat at all times, and consequently makes changes to the narrative in the outermost narrative frame accordingly. This process can be thought of as an iterative state machine, as displayed in Fig 17.

In this way, AC0 is reading the behavior of the player and making subtle, silent decisions about how to tailor the story to the particular player, and this mechanic is considerably implicit—the game does not overtly inform the player that this process is occurring. Conversely, this sort of action/reaction relationship between player interactivity and story structure usually manifests in games as a bald-faced question posed to the player in a directly-asked bit of dialog. This can be considered the conventional method of letting the player decide how to shift the story. These methods with their varying degrees of overtness/subtlety will be discussed and compared below in the subsequent sub-Chapters.

4.6.1 Narrative-Altering Mechanics in Other Games

A common example of this sort of direct solicitation of the player’s story-altering input can be seen at various points throughout the single-player campaign mode of Starcraft II. In that game, moral conundrums surface at key points in the game that overtly force the player to choose between two different courses of action. The consequences are labeled plainly for the player in clarified text below each of

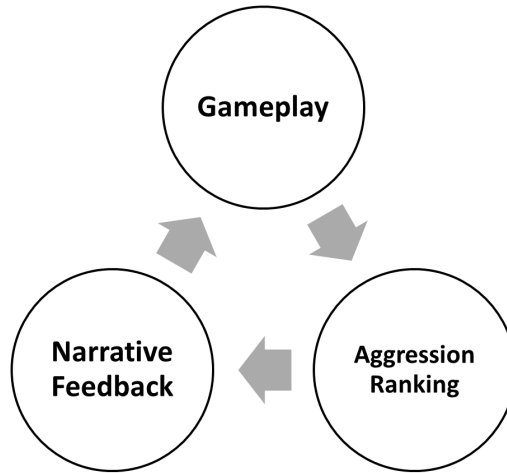


Figure 17. The iterative state machine of the SNM in AC0.

the options, so that the player knows that once they have made a choice, there is no going back (Fig. 18).

Another example of this can be found in Konami’s renowned title, Metal Gear Solid [37]. In that game, the player’s ability to “resist torture” during a pivotal part of the game will directly determine which of the supporting characters survives to the end of the game. During this scene, the antagonist character Revolver Ocelot issues instructions to the protagonist Solid Snake (Player) which are semi-disguised as intimidating dialog (“Press the Circle Button repeatedly to regain your strength...And don’t even think about using Auto-Fire, I’ll know...” [37]). Through this interaction, the player knows both how to attempt to navigate this choice nexus and the consequences should they fail to keep up with their button taps (Fig. 19). While not as overt as the aforementioned Starcraft II example, the example presented here from Metal Gear Solid still follows the same conventions of somehow directly informing the player that a choice has been presented, must be taken, and has consequences for the story outcome of the game. In both the examples of Starcraft II and Metal Gear Solid, players



Figure 18. The typical “What would you do?” scenario as presented in Starcraft II. The decision point is clearly delineated and the outcomes of each decision branch are precisely defined.

are plainly aware of the fact that they must act in order to progress/change the story.

4.6.2 Stealth Narrative Mechanic (SNM) in AC0

By contrast, AC0’s method of informing the player that a story-altering choice is at hand is so silent as to almost be a non-event. Although the game mechanic is clearly and sufficiently explained in the accompanying instruction manual for the game [36], AC0 makes no overt mention that it is ranking your performance in order to use that rank to initiate gradual, yet meaningful changes to the game narrative. Players who neglect to read the manual of AC0 may not even notice that the game’s outer narrative is malleable until a second or third playthrough, and that is only if that same player played the game from start to finish at a different level of aggression. Even then, there is still a chance that the player will not realize the causal connection between their own ferocity of play and the changes which occurred to the plot. Indeed, the result is that the SNM of AC0 can truly be considered very stealthy.

The ultimate advantage that this “stealth approach” accrues is that the game



Figure 19. In Metal Gear Solid, even if the instructions have some subtlety to them, most decision points are forced, obvious affairs. In most cases, the player knows without a doubt that there is a plot-influencing choice.

has less of a need to bother the player with its very presence as a game. It helps to create an immersive story-game experience by not reminding the player that it is a game. It has less of a need to break the so-called 4th Wall or break the illusion of the game world as the other examples potentially inadvertently did. Subsequently, it allows the game to truly maintain the Suspension of Disbelief [38], and in doing so, adds to the realism of the game story and raises the quality of its narrative altogether [39].

Conversely however, it is important to note that SNM has a trade-off and can potentially negatively influence the replay value of a given game [27]. Replay value is an aspect that is significantly important to games and other related media such as films and music. Essentially, the more times a person is encouraged or motivated to enjoy a particular thing, the better it is from a variety of perspectives such as (but not limited to) marketing, entertainment, reputation, etc.

Particularly, replay value in games is driven by factors such as having a wide variety of a plurality of “options.” And in this case, “options” can mean anything from a huge selection of obtainable supplementary items, attainable character skills/weapons/armor/cosmetic looks, etc.

For the purposes of our analysis, it is important to note that Replay Value is

not merely a singular degree of measure, but rather an ecosystem of a variety of independent game design and marketing factors. For the purposes of this study, we contend that SNM specifically affects the Exploratory factor of Replay Value, where Replay Value may be influenced by how much of the content of a given game is explorable (Fig 20). A large factor influencing the replay value of a game is the presence or lack of in-game content, such as the potential lack of multiple story-paths and/or multiple endings. Specifically, the presence of multiple story-paths and endings constitutes a wholesale positive effect on the replay value of a given game, while the lack is conversely negative. When this function is considered, it becomes evident just how replay value may be affected by an inherently stealthy story branching mechanic.

While there is still a considerable variety of content present in AC0 (multiple story paths, multiple fighter aircraft, special weapon varieties, and mission achievement rewards), because the story branching mechanic of AC0 is unconventionally subtle due to the SNM, a player may not actually be aware that they are influencing or playing through a multi-faceted story at all. This has the potential to lower the replay value of the game as a whole, as it is essentially the perceived lack (or ignorance) of existing story options.

Despite the potential for negative effects, the SNM employed by AC0 to tell its story is still particularly intriguing to our study, because its uniqueness and expression in the world of games is clever, if not potentially too subtle. But how best to investigate and test the SNM? Our proposed answer to this question is presented in detail in the subsequent chapter.

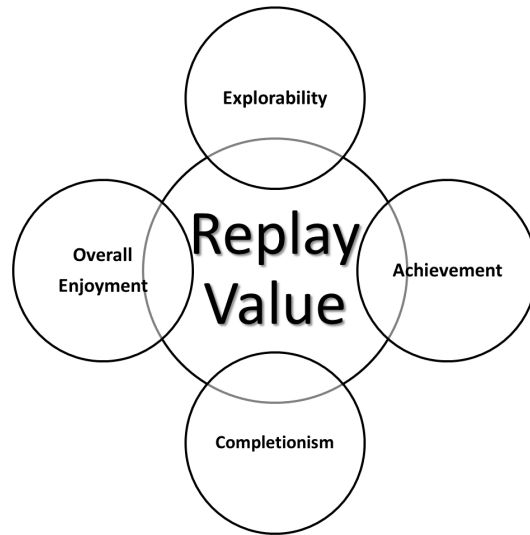


Figure 20. A Proposed Theoretical Model of the Ecosystem of Replay Value. We contend that the Replay Value of a game is not influenced primarily by one singular factor, but rather by several, often in tandem with each other, akin to how weather and biomes on the Earth are an overlapping phenomenon of factors, hence our use of the phrase, “Replay Value Ecosystem.” In this preliminary model, we propose the 4 satellite factors of Explorability, Achievement, Completionism, and General Entertainment as factors cited by the players of AC0 who were interviewed in our study in Step 3 of our applied CIMI Method.

5. Testing the Effectiveness of the Stealth Narrative Mechanic

The SNM of AC0 represents an intriguing and unique game mechanic for the development of game narratives. As such, based on the results of our Close Critical Reading which has singled out the SNM as having the special relationship with the game narrative in AC0, it is necessary to investigate the SNM further. This Chapter will detail our hypothesis regarding SNM and our application of CIMI Method Step 2: the Isolation of the game mechanic in order to investigate the SNM.

5.1 Hypothesis

We hypothesize that in a video game, a Stealth Narrative Mechanic is:

1. effective for tailoring the game narrative to the player's gameplay style but
2. negatively affects the degree of replay value of a game.

As we have discussed in Chapter 3, we contend that the SNM is in fact better for tailoring a story to a particular player because its subtlety makes the SNM function as a mostly observational mechanic which inherently refrains from making its presence known to the player (on a first play through). Because of this, the player is unaware of the mechanic and we surmise that the player will most likely play the game “as themselves” as opposed to being aware of the mechanic and second-guessing the system.

However, the very same subtlety which we contend is an advantage for tailoring narratives to players can potentially also lesson some dimensions of the Replay Value ecosystem. Players who are unaware of how to manipulate the story paths of the game will also not be aware of all existing story paths, and this is not particularly encouraging when it comes to getting the player to replay a given game.

In order to bear our hypothesis out, we undertake the next step of the CIMI Method, which is the Isolation of the game mechanic, which for our purposes is the SNM.

5.2 Isolating the Game Mechanic using a Prototype Game

In order to test our hypothesis, that stealth mechanics like the one found in AC0 which silently measure player aggression and tailor a narrative to the player based on that aggression are effective for tailoring a game narrative to the player and better for creating an enjoyable narrative, we propose the following experimental setup which consists of two parts:

1. Using a self-made prototype mini-video-game which utilizes the same fundamental stealth narrative mechanic employed by AC0 in order to solicit user responses through a research questionnaire and investigate any correlations to be found there.
2. Using individual player interviews with gamers who have both experience with the original game AC0 and have cleared the story mode of the game at least once. Interviewing actual gamers who have played the original source material of AC0 is a qualitative research tool which is frequently used in the Social Sciences in order to investigate people’s meanings, ways of expression, and experiences with a complex and oftentimes subjective phenomenon, much akin to the methodology employed by [40]. However, unlike [40] which utilizes a true Focus Group Methodology composed of a single interviewer addressing a group of several participants, we wish to start with individual player interviews in order to retrieve more specific, personalized experiential data. This decision has been further encouraged by the overall popularity level of the source material of AC0, in that the game itself has only a moderate following and was released around 8 years ago (at the time of this writing). In other words, finding a relatively large number of interviewees, while not impossible, is not time-feasible for the scope of this preliminary run of CIMI. We wish to test this initial implementation of the CIMI Method, revise accordingly, then scale up the method to incorporate larger numbers of interviewees in subsequent iterations. Additionally, we chose to utilize a single-interview version of the study conducted in [40] specifically because such interview methodologies provide opportunities for the interpretation of the human reaction to games, which as a function of subjectivity, can potentially range far in any direction. In particular, we

will be utilizing these interviews as a way to understand the effect that the story and mechanics of AC0 had on the players who have actually played it, and it doing so it could potentially render some insights as to the overall effectiveness of the stealth narrative mechanic as it was originally expressed.

5.3 Game Prototype: “Cube Invaders”

We adopt the method of having subjects play through a small, short game which employs the same narrative stealth mechanic as employed in AC0, only on a much smaller scale. This experiment is carried out on a custom-made mini-game for two important reasons:

1. Time—Though the source material (in this case, the actual AC0 game on the Playstation 2) would be ideal, there are issues of time constraints. In general, AC0 is considered to be an approximately 20-hour game. In other words, the difficulty and scope of the game usually results in players of average skill-level being able to complete the game in an average of about 20 hours. Having noted as much, 20 hours (though informally considered by average gamers to be relatively short) is an infeasibly long amount of time to ask potential study participants to endure, especially on a purely volunteer basis. In fact, the very feasibility of conducting studies on time-intensive games has been considered in the previous work of [25], but ultimately the conclusion reached in that case was still a very ambivalent middle-stance on the issue. This is not to say, however, that such a study could be conducted, but in the interest of simply isolating the aspect of SNMs, we contend that it would be much more feasible to craft a custom facsimile game that is the essential distillation of the SNM that will only last a maximum of 10 minutes.
2. Control—Again, while the source material would be ideal and direct, the actual algorithms used by the AC0 game are entirely classified and proprietary to the game software as a blackbox process. Conversely, with a mini-game made specifically by us, we can control the test variables, difficulty settings, aggression rankings, and scenarios, and potentially modify or further develop the test bed for future subsequent studies. We contend

that having this degree of control would make the experiment much more feasible to carry out.

As such, the game prototype we have created for this experiment is introduced below.

5.3.1 Game Structure and Progression

Our game, tentatively titled “Cube Invaders,” is a complete stripping down of AC0 into our best attempt at an isolated, minimalist reinterpretation of the SNM alone. It was created using the free version of the Unity Game Engine [41], and coded entirely in the C# scripting language. The game itself lasts on average of about 10 minutes, and is laid out in the following way (Fig 21):

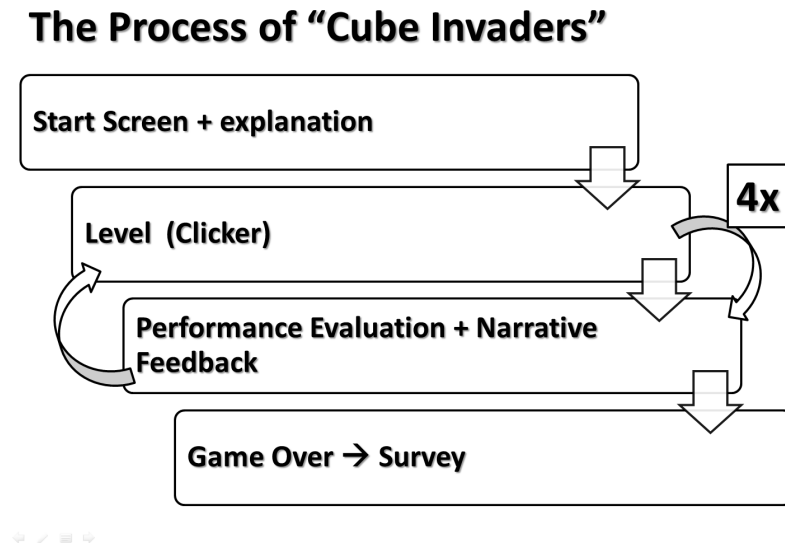


Figure 21. Structure and Process of test game prototype “Cube Invaders.”

Per the Figure 21, Cube Invaders progresses in the following manner:

1. A Start Screen is displayed (Fig. 23). This Start Screen shows the Game Title, a brief textual explanation of how to play (narrativized instructions:

“Defend the earth from an invasion from space! Click the alien cubes to destroy them before time is up and become a hero!”), and a Start Button which initializes gameplay and advances the player to the next Level Screen.

2. A Gameplay Level Screen is displayed (Fig. 24), with an Enemy Alien Cube in the center of the screen. If the player left-mouse clicks upon the cube, a destruction animation plays and a new cube spawns at a random point (with a random spin-rate) on the screen. The game silently records the number of Enemy Cubes which were successfully destroyed by the player before the time limit is reached. This information is then used to classify the player’s Aggression Ranking according to the same Knight/Soldier/Mercenary-type gradient used in AC0. The calculations for the rankings are discussed in Chapter 4.1.2.1. A Level Timer is displayed which shows how many seconds are remaining within the level. When the timer reaches 0, the game advances the player to the Narrative Feedback Screen.
3. A Narrative Feedback Screen is displayed (Fig 25) which shows a narrative about how the player is perceived by the mass media. This narrative is brief, only about two sentences in length, and takes the form of a newspaper headline. The headline changes according to the Aggression Ranking achieved in the level prior. Below the narrative feedback window, there is an OK Button, which if pressed, will advance the player to either A) another Level Screen, or B) the Game Over Screen (this depends upon the amount of Levels that have been designated by the tester).
4. The Game Over Screen appears at the end of the game (Fig. 26), and displays the words “Game Over” to the player. After a three-second pause, the game automatically forwards the player’s internet browser to the Survey Form (google drive form) for the Survey.

It follows that the structure of this game is essentially the same as the state machine provided by the original AC0 source material (see Fig. 17), but distilled down into a very simple form. In order to render the same type of narrative evolution rendered by AC0, an iterative transitioning between the gameplay levels and narrative feedback levels is required in the subsequent design of Cube Invaders.

This is particularly important as it will be crucial to emulate the iterative nature of the stealth narrative mechanic found in AC0. With the Cube Invaders game, this process is both simplified and shortened, with the Levels only lasting 10 seconds, and the iterations between Gameplay Level and Narrative Feedback Screens in test trials was four iterations.¹

5.3.2 Aggression Ranking in Cube Invaders

A given player's Aggression Ranking in Cube Invaders (analogous to the Ace Ranking system in AC0) falls into one of three categories, which are based on the same types found in AC0, that of the Knight/Soldier/Mercenary-type rankings. As in AC0, these rankings are reported back to the player as narrative feedback in the form of narrative levels. Specifically, it is important to note that the a player of Cube Invaders is not overtly informed by the game of their rank in the verbatim terms of "Knight/Soldier/Mercenary," but rather as descriptive narrative statements: narrative feedback takes the form of newspaper headlines (whereas in AC0, the narrative feedback was in the form of cinematically-styled interviews). In other words, upon a given Gameplay Level completion the player is not told that (for example), "You are a Mercenary," but instead is informed about a newspaper headline which reads, "Hero Goes on Blood-thirsty rampage against aliens, Saves Earth in the Process; Eyewitness says: 'What a crazy battle, they clicked so many cubes it and I didn't think he was ever going to stop...'"

¹ On some unavoidable differences in the designs of AC0 and Cube Invaders

It should be noted that one fundamental difference between the designs of the original source game AC0 and the prototype experiment game Cube Invaders is the conventional game mechanic of failure. In AC0, it is possible to the player to fail the game by either A) not fulfilling a given mission's stipulated goals, or B) being destroyed by an enemy fighter plane. However, with Cube Invaders, this state of failure has been purposefully omitted as the inclusion of it is not deemed as essential for testing the stealth narrative mechanic, and the presence of a game fail state would only serve to potentially decrease the feasibility of the test.

Ranking of the players in Cube Invaders is decided based on the following process:

```
if (kills >= [(# of seconds)*1.66])
{
    rank = mercenary;
}
else if (kills >= [(# of seconds)*1.33])
{
    rank = soldier;
}
else
{
    rank = knight;
}
```

We use the time (in seconds) in the level as a baseline because it can easily be assumed that most normal users who are familiar with using computers and a mouse should be able to click at least 1 Enemy Cube per second. Furthermore, we use the numbers 1.33 and 1.66 to correspond to point ranges reflective of even difficulty rankings.

5.3.3 Transitioning from Aggression Ranking to Narrative Feedback

At the conclusion of each gameplay Level, the game will assess the player's performance in the gameplay level immediately prior, and will return the appropriate narrative feedback to the player in the form of a "Breaking News" Headline (Fig. 25). Players are presented with the narrative feedback and given an "OK" button to confirm and advance to the next screen, which will either be another gameplay level or the Game Over screen depending on that player's overall progress in the game. In this way, the narrative feedback system of Cube Invaders mimics the same type of feedback that was given in AC0 in terms of player performance and story development. In Cube Invaders, however, the portrayal or image of your character (as molded by that player's given performance) is reflected as more of a



Figure 22. Player performance rankings and the narrative feedback each rank yields in Cube Invaders.

mass-media/public image concern as opposed to being an interview or commentary from a downed enemy pilot as it was in AC0. Both AC0 and Cube Invaders provide narrative feedback that is a narrativized reflection of the player, a function of the game essentially commenting on how aggressively they player played the last round. Each ranking (Knight, Soldier, and Mercenary) is translated into a descriptive narrative breaking news headline and short eyewitness testimony as in Figure 22.

5.3.4 Cube Invaders Post-gameplay Questionnaire

Following three seconds after the Game Over Screen, players of Cube Invaders will have their default internet browser application directed to the research questionnaire. The questionnaire was administered over Google Drive's internet services as a google form. Depending on the player's given final ranking, they would be

inconspicuously directed to one of three surveys (corresponding to their ranking).

The questionnaire was designed to probe the subject's experience with the SNM of the Cube Invaders prototype. Specifically, subjects were asked

- if they were aware of the changes being made to the narrative,
- if the narrative they received throughout the game fit them as a player,
- if they were aware that those changes were a result of their performance,
- how they felt about hidden system like the SNM, and
- if they would be encouraged to play the game again should the mechanic be more overt.

This line of questioning was designed to directly address the aims in our hypothesis which deal specifically with understanding if the effectiveness of the SNM for tailoring stories to players and the potential effects on the Replay Value ecosystem.

The questionnaire was organized as follows:

- An introductory section which asked some general information of the subject such as gender, age, and gaming background and preferences
- A central section about the subject's reactions and impressions to Cube Invaders which probed about perceived difficulty levels, and whether or not the subject was aware that the narrative feedback was changing in response to the subject's actions.
- A concluding section which probed about the subject's personal preferences about games with multiple story paths and whether or not an awareness of story-changing mechanics in a game was preferable or not. The questionnaire concludes with a general call for any other comments.

It should be noted that at this point in our application of the CIMI Method, the aforementioned questionnaire is being applied to the participants of the prototype Cube Invader game, and not the original Candidate Text of AC0. Considering this, we allow for some fundamental difference in the experiential data. However,

as there is a stark lack of time-feasible methods of game mechanic analysis from the player perspective, we continue to contend that so long as the prototype game in this second step of CIMI is designed accurately with respect to the target game mechanic, differences should be potentially negligible.

The questionnaire for Cube Invaders can be found in full in the Appendix. From this point, we can move on to Step 3 of the CIMI Method which is the solicitation of Player Interviews, which will be explained in the subsequent sub-Chapter.

5.4 Ace Combat Zero Individual Player Interviews

As it was mentioned above, in designing our Player Interview Questionnaire for this step of the CIMI Method, we referenced [40] as a basis for our questionnaire methodology, but made necessary changes to that method for the specific purposes of our study and in order to incorporate the potential benefits of [40] into our study. In this case, [40] could not be ported as-is into our setup due to the fundamental differences between our fields and research goals, but we see there being much advantage in utilizing interviews of this type for understanding player narrative experiences. In terms of the differences between [40] and our method, for example, instead of doing a purely group-based Focus Group Methodolgy, we instead decided to probe individuals for their accounts of the story/experience in AC0 because this way was much more feasible given our candidate text of AC0, its medium popularity, and its relatively aged release date.

Furthermore, as a Playstation 2-era game, AC0 averages approximately 20-hours on a single playthrough. This is sizable commitment of time that is simply infeasible when soliciting research study participants. Therefore, in order to delve more qualitatively into player reactions, impressions, and experiences with the narrative presented in the original source material of AC0 and the stealth narrative mechanic without the need for forcing participants to devote 20+ hours to actually experiencing the game, we conducted interviews with 8 anonymous subjects who had already played the game in the past. Subjects were required to fulfill the following two qualifications in order to be considered for interview:

- Considerable familiarity with the game of Ace Combat Zero: The Belkan War

- Having accomplished at least one complete play through of the single-player story (or campaign) mode

The subjects who fulfilled the two qualifications above are a good place to start when it comes to investigating the effects, impressions, and experiences inspired by a game narrative. In particular as it pertains to this investigation, our query here is focusing on how the players felt about the Stealth Narrative Mechanic, its perceived effectiveness, and any other potential insights. With the player interview format, we have certain unique advantages over the Cube Invaders isolated game mechanic approach.

Just as in [40] which this interview method is based, we can get a direct opinion from an actual human who has played the actual source material of AC0. Where Cube Invaders is an attempt at isolating a singular aspect of gameplay and narrative mechanic, these interviews by contrast act as a direct sampling method, allowing us the opportunity to get first-hand accounts of gameplay experiences and opinions. Secondly, and more importantly, by conducting a verbal interview with actual players of AC0 we are able to center our investigation around our core questions while simultaneously retaining the freedom and flexibility to pose follow-up questions to any intriguing responses which interviewees may potentially give us. It is this exploratory nature of the verbal interview which we hope will render us with the more insightful findings as opposed to the Cube Invaders data, which while more plentiful than the player interviews, ultimately is used only to get a statistical impression. With the individual player interviews, we anticipate textual responses that can be explored during the interview, and textually analyzed/deconstructed/interpreted after the interview has concluded.

Akin to the survey presented in Cube Invaders, the interviews began with some general questions about the subject, such as age, gender, gaming preferences and frequencies, after which the interview questions focused mainly on getting the subject's impressions on Ace Combat Zero as a game, their impressions regarding the story, and their experiences with both the ranking system and the story evolution which resulted from the rankings. The full set of interview questions in their entirety can be found in the Appendix. Furthermore, subject responses were recorded and transcribed, and their answers are analyzed and discussed in Chapter 6.



Figure 23. Cube Invaders Start Screen with game title, instructions and “Start” button.



Figure 24. Cube Invaders Gameplay Level Screen featuring the current level in the top left of the screen, remaining time in seconds at the top center, and the remaining targets just below the remaining time. In the approximate center of the screen is an enemy cube, and the particle effects visible around it are from a cube that has just been “destroyed” via mouse click.

Level 1 EVALUATION:

Hero stops Alien Invasion by killing just enough Aliens.

Eyewitness says: 'I saw it--he could have kept shooting cubes, but after they retreated, he did the honorable thing and let them go.'



OK

v1.9

*Research survey to follow end of game.

Figure 25. The Narrative Feedback Screen of Cube Invaders. The Narrative is offered to the player in the form of a news headline regarding their portrayal in the media.



Figure 26. Cube Invaders Game Over Screen. At the bottom of the screen is the conspicuous notice that the research survey will automatically follow the end of the game.

6. Results and Discussion

The results from both the Cube Invaders mini-game surveys and the individual AC0 player interviews are introduced and discussed in the subsequent Chapters 6.1 and 6.2, respectively. With the Cube Invaders survey data, we will attempt to make statistical inferences as to any visible trends of opinion and perceived experience. With the individual interview data from the AC0 players, we apply a qualitative textual analysis to gain insights into the subjective nature of player experience with the source material and to better understand real player opinions regarding the stealth mechanic and its perceived effectiveness. Both data sets will be studied in order to see the effectiveness of SNM for tailoring narrative to a player, and for any effects of the SNM on the Replay Value ecosystem.

6.1 Looking at Cube Invaders Survey Data

The experimental period for the Cube Invaders game lasted for a two weeks from 12/17/2013 to 12/31/2013, during which the game was made available to the general public via the internet. After the conclusion of the experimental period, a total of 62 participant survey responses was obtained (79% Male, 21% Female). Based on the Cube Invader participant data, we were able to observe the following trends:

Most of the sample consists of subjects who consider themselves in the range of Casual to Average Gamers, with the majority of participants playing games generally from about 0-10 hours per week (for Knights) and 0-30 hours a week (for Soldiers). Higher reported hours per week of gameplay were also reported from players who obtained the Mercenary ranking in Cube Invaders, where 25% of the Mercenary-ranked players reported playing over 40+ hours per week. These numbers appear to reflect that players who spend more time devoted to playing games have a tendency to rank higher on ranking system of Cube Invaders. This observation makes sense as more time spent on gaming activity tends to mean that players are potentially better at playing games.

The majority of currently-sampled participants who achieved the Knight Ranking classified themselves as either Casual to Average Gamers, whereas those who achieved the Soldier or Mercenary Rankings were admittedly more within the

Fanatical to Hardcore range of gamer. This also correlates somewhat with the above observation that those who tended to score higher on Cube Invaders in terms of ranking also spent more time on average playing other games.

Slightly more Knight-Ranked participants seemed to be aware of the Stealth Narrative mechanic in contrast to those who were not aware of the mechanic, though these percentage breakdowns are fairly even (45% stating they were aware, while 42% stating that they were not aware, and the remaining 13% not knowing if they were aware or not). For Soldier-ranked participants, a clear majority of 81% those participants stated that they were indeed aware of the mechanic. With the Mercenary-ranked participants, however, although a majority 75% of the Mercenary-ranked players admitted that they were aware of the Stealth Narrative Mechanic, the remaining 25% of the Mercenary-ranked players stated that they did not know if they were aware or not of the Stealth Narrative Mechanic. At current, there is a slightly observable trend that shows that more of the Soldier/Mercenary-ranked players seemed to be aware of the mechanic, in relation to their Knight-ranked counterparts. When considered alongside the trends observed prior about perceived gamer degree and hours spent playing per week, we can see a slight correlation between gaming experience, skill, and an awareness of gaming mechanics. Considering these observations, it is likely that all of these factors contribute to a general sense of “Gaming Literacy,” where time spent gaming potentially positively corresponds with both familiarity with gaming conventions and potentially also with increases in skill level. More research into this connection will be required in order to further qualify this notion.

In terms of the appropriateness of narrative feedback-to-play style, results were varied. For the Knight-ranked players, the largest group (34%) felt that the news headlines did not accurately reflect their play style. As a matter of speculation, this could be either due to a flaw in the experimental game’s design, or a narrative feedback headline for the Knight Ranking that was either too general/vague or somehow inherently incongruous with the aggression heuristic employed by the game. Furthermore, as “appropriateness” is a highly subjective term and crafting interactive narratives that are based on iterative feedback is as much a creative aesthetic process as much as it is a technical one, it is inherently difficult to both 1) devise this mechanic in a way that renders objective feedback,

and 2) still potentially variable depending heavily upon each given player's feelings. Further iterations and version updates to the experimental design of Cube Invaders will be required in order to refine the approach to potentially capture more telling data.

By contrast, a clear majority of both the Soldier- and Mercenary-ranked participants (50% in both cases) felt that the narrative feedback headlines did in fact accurately reflect their play style.

In terms of personal preference of multiple-story-path games, the majority of Knight-ranked subjects (65%) felt that they preferred games that generally had multiple storylines as opposed to those types of games with fewer or merely one storyline. Soldier-ranked participants reported a unanimously positive response to preferring multi-story-path games, with 75% in the affirmative and the remaining 25% stating that they had no opinion on the matter. For the Mercenary-ranked participants, responses were slightly more evenly-distributed, with 63% reporting a positive preference for multi-story-path games, 13% reporting that they do not prefer such games, and the remaining 25% stating that they have no opinion. Generally speaking, these results all infer that games with multiple-story-paths are more appealing to gamers than those without either multiple paths or story at all.

To step further, when asked if players would prefer to know of the existence of multiple story paths and the means to achieve them prior to starting the game, all the ranking groups seemed to favor knowing about the mechanic as opposed to not knowing. Knight-ranked participant results showed that 50% of that group stated that they would like to know, while 37% stated that they would not like to know, with the remaining 13% being un-opinionated. For Soldier-ranked participants, a majority of 57% of those subjects showed a preference for wanting to know about the existence of methods to change the story paths within a game, as opposed to 32% who did not want to know, and 13% who remained without opinion. With the Mercenary-ranked players, there was a 63% in favor of knowing versus 13% in favor of not knowing, with an anomalous 25% having no opinion for this question. It can be safely inferred in this case that generally-speaking, gamers tend to be in favor of knowing exactly how to play and navigate multi-story-path games.

An overwhelming majority of 74% of the sample subjects in all rankings noted

that being aware of the Stealth Narrative Mechanic would encourage them to want to play the game again. This is interestingly indicative of a potential disadvantage of Stealth Narrative Mechanics, which essentially points to a possible decreasing of replay value in a game if the story-altering methods are subtle, hidden, or otherwise somehow unknown to the player.

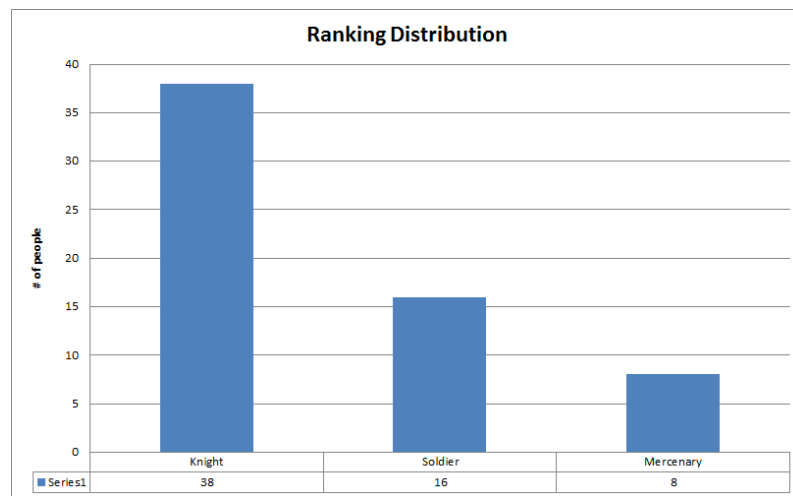


Figure 27. Ranking distribution of Cube Invaders players. The same Knight/Soldier/Mercenary rating system from AC0 is used in these rankings which correlate with player scores.

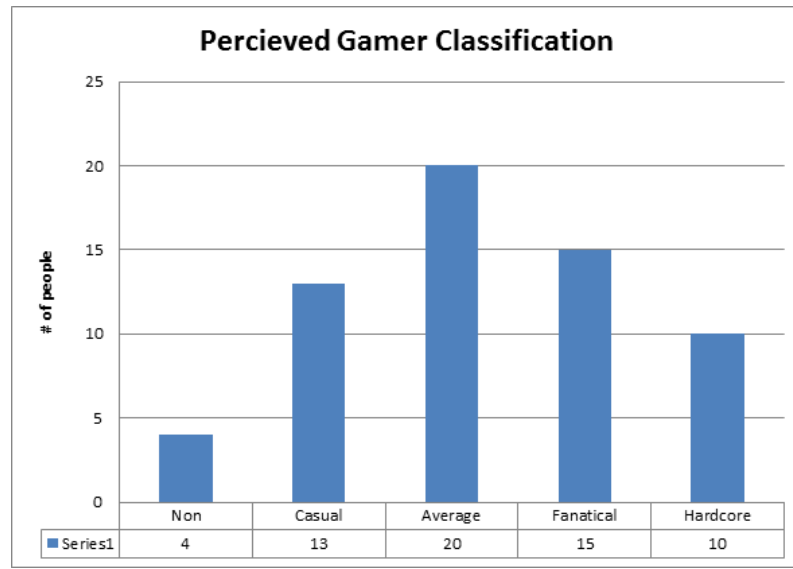


Figure 28. Perceived gamer classification. Players were asked to classify themselves according to these terms which are colloquially known as verbal indicators to the degree of a gamer. For example, a Hardcore gamer would be considered someone who prioritizes games as a leisure activity, whereas a casual gamer is someone who only games very occasionally, and a non-gamer is someone who perceives themselves as not usually playing games in free time.

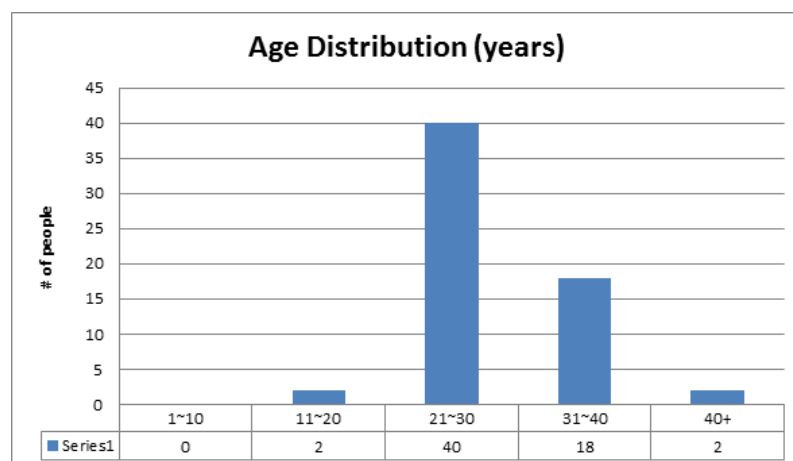


Figure 29. Age distribution in years of Cube Invaders players

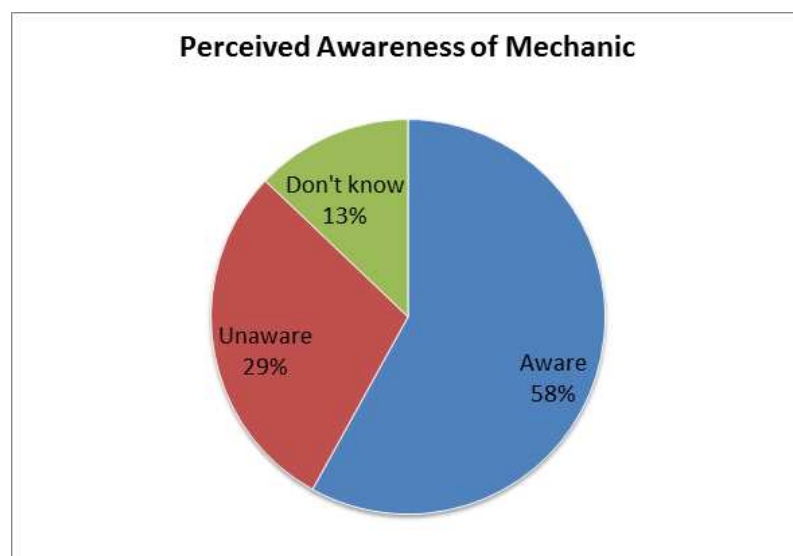


Figure 30. Perceived awareness of the stealth narrative mechanic in Cube Invaders. Players were asked if they were aware that their performance in the gameplay levels affected the types of narrative feedback headlines they received at the end of each level.

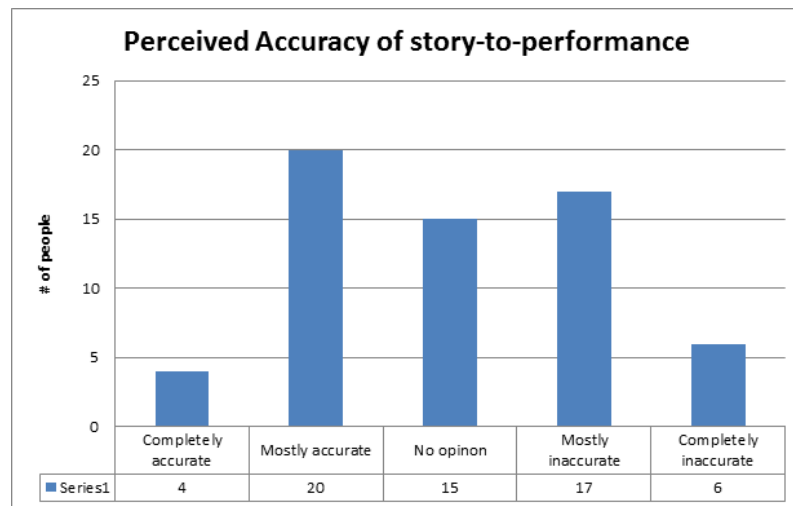


Figure 31. Perceived Accuracy of story-to-performance in Cube Invaders. Players were asked if the narrative feedback headlines they received at the end of each gameplay level were accurate in terms of their own self-assessment of their performance.

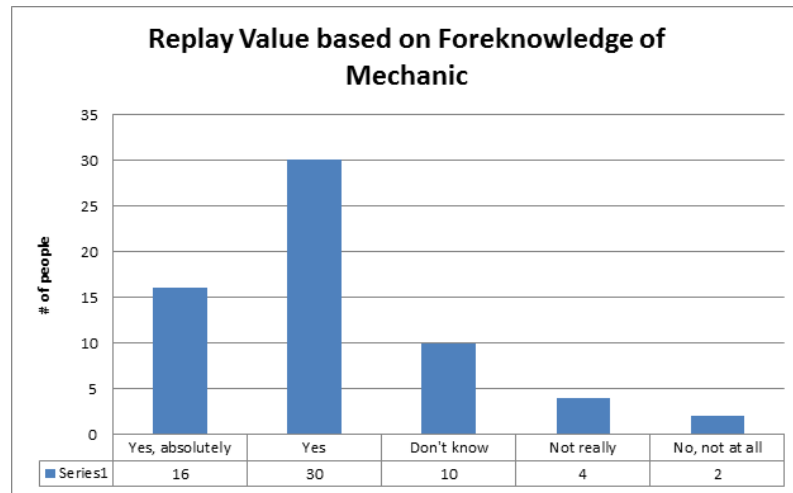


Figure 32. Replay value based on foreknowledge of the story-manipulation mechanic. Most players seem to agree that clear foreknowledge of story-manipulation mechanics will motivate them to play that same game again in the future.

6.2 Player Interview Responses: Exploring the Discussions with the Veteran Aces of AC0

This Chapter is structured according to the main questions of the interview which dealt specifically with the AC0's player's experiences with the game, its mechanics, and its rendered narrative. One-on-one interviews were conducted with 8 participants with first-hand experience with the source material of the actual Ace Combat Zero game. All participants have completed at least one full playthrough of the game from start to finish. Interviews were conducted orally over Skype and lasted an average of about 30-45 minutes.

A summary of the general player responses is listed below each of the relevant sub-headings below.

6.2.1 Perceived necessity of story

How necessary did you feel the story of AC0 was (scale of 1-10, 10 being absolutely necessary and why?

We felt the need to ask this question in order to test for two things, mainly if the interviewee recalled any part of the story (in essence, we were also probing if the story of AC0 had left any sort of impression on the player), and furthermore as a way of framing the interview and directing it towards a discussion which was explicitly about narrative.

Despite this being more of a set-up, or initializing sort of question, it also managed to yield some of the more interesting responses in the data we collected for the interviews, and presented us with several opportunities to ask follow-up questions in order to dig deeper into how players are experiencing the narrative of AC0.

All but one of the interviewees seemed to be able to recall the story of AC0. Furthermore, of those interviewees who sufficiently remembered the narrative presented in the game, all of them mentioned that they felt that the story of AC0 was anywhere from 7-10 on the necessity scale.

Interviewees often used words such as “emotion,” “context,” “background,” “meaning,” “gravity,” “immersion,” and “achievement” when describing their opinions as to why they believed that the story of AC0 was necessary.

“If it’s a scale from pointless to necessary, I’d put it up at nine or ten [Necessary]. Without it the game would just be a generic flight sim; with it, it was something special. What helped particularly was that the story integrated very well with the gameplay too- it was told through in-game radio chatter and occasional cut scenes which used the device of an imitation documentary to give a sense of gravity to the events in the game. To me as a player, well that’s sort-of interesting. Usually I’m not a big story person—that’s why I tend to prefer more sandbox-type games or very open-ended rpgs. However in an otherwise quite sterile setting, like a flight sim, a good story becomes very important to me. [It] adds color, builds character, breaks monotony, most of all it gives you more of a sense of achievement, and makes the world you’re playing in much more interesting. AC0 does that very well in general, particularly by tying different individual game’s stories together and maintaining a consistent and plausible alternate history setting.”

-Subject #5

6.2.2 Opinions on the Ranking System

What did you think about the ranking system?

This question was asked in order to ascertain the subject’s level of familiarity with the Ace System/Ranking game mechanic, regardless of first-time play through or initial awareness/ignorance of the mechanic. Opinions of the ranking system of AC0 were varied. There were less commonalities regarding the interviewees reactions to the system (in relation to their opinions of the necessity of the story), but many of the interviewees cited a general awareness of the ranking system and their own decisions to play the game according to their own play style, as opposed to attempting to “game the system,” so to speak, on their first play through. That is to say, on the first play through, many of the interviewees simply played as they saw fit as opposed to trying to play with any particular ranking in mind.

“[The Ace Ranking System was]...simple in execution, but says something about the player’s mindset and values, regardless. The idea of exploring different mentalities and how that changes the outcome of the war, even if only [in a minor way] is part of what made Ace Combat Zero’s story so in-depth. It also added to the game’s replay value, which is always more fun.”

-Subject #7

6.2.3 Awareness of SNM

Did you know that the ranking system affected the type of cinematic you got? With this interview question, we now begin to get into just how “hidden” the players felt the SNM actually was. Based on the responses, we can begin to get a general sense of how subtle this mechanic really is.

All of the interviewees unanimously reported that they were entirely unaware of the stealth narrative mechanic upon their initial play-throughs with the game, though the majority of them reported that they had become aware of the mechanic at least upon their second playthrough, with one interviewee remaining wholly unaware of the mechanic until the interview was conducted.

Altogether, 6 out of the total 8 interviewees reported awareness of the mechanic at least on their second playthrough and onward. One interviewee was informed by a 3rd party at mid-way through his own progress in his first playthrough that (paraphrasing) it would be advisable to attempt to attain different rankings in the game so as to influence the story. That interviewee surmises that had that 3rd party not informed him of the change, it is very likely that he would have missed the stealth mechanic entirely.

When asked to elaborate, opinions regarding this stealth narrative mechanic were slightly varied, though generally referred to as a positive trait for the game. However, one interview exchange in particular went into considerable depth when the discussion of the ranking and story relationship surfaced:

“I had only one major objection about it- its visibility. On my first playthrough I ignored the mechanic completely- wasn’t really interested, played the game by ear. That I really enjoyed, as I got a sense that the game was responding to my choices in a smart kind of way, pitting my kind of enemies against me. On my second playthrough I paid attention to it, and it kind of spoiled the mechanic—seeing the algorithm, sort of, that was controlling the game’s responses in front of you—was like the Wizard of Oz coming out from his curtain. In addition, seeing it was immersion breaking, as one’s ethics aren’t exactly the sort of things one can codify like that.... So in summary, I loved the mechanic but hated knowing about it”

-Subject #5

In particular, Subject #5’s response to this question is interesting because (although it went beyond simply discussion their awareness of the connection between the ranking and the story,) their response illustrates just how much of an effect this type of game design decision can be, and additionally how varied the responses can be.

6.2.4 Perceived effect of foreknowledge and Replay Value

Would knowing about this game mechanic while you were playing it make you want to play the game again? Why or why not?

All of the interviewees save for one agreed that knowing about the existence of the stealth narrative mechanic and its particular modes of operation would encourage all of them to want to pick up and play the game AC0 again. The only dissenting opinion came from Subject #5 who noted that, “it struck me as one of those mechanics you have more fun with when you don’t know about it. Although it did help a bit with replayability, if that’s what you mean.” This response is somewhat anomalous, as Subject #5 seemed to imply that not knowing about the mechanic would be some kind of encouragement to replay the game again, which is contrary to our hypothesis. However, this sentiment seems to be borne out also by Subject #7 who noted the following:

“The game has significant replayability because of the fact that you can choose different story paths. But when you first go through, that first play through is the attention-getter. That’s the one that makes you want to play the game more so. The fact that it falls back to what kind of player you are with the Ace System—it’s just that kind of realization and uniqueness—[it’s like] you finish a great movie, and you find out there was some bonus content, and you just go back.”

-Subject #7

6.2.5 Perceived effectiveness of stealth narrative mechanics

Do you feel that it is better for the game to keep this information hidden from you, or would you like to know about it while you are playing? Why or why not?

This question addresses whether or not, based upon the player’s subjective experience, the SNM of AC0 is a good thing for game design.

Responses to this question varied, but several of the interviewees sought a balance between outright overttness and complete invisibility of the play mechanics which influence the story outcomes in multi-story-path games.

“Both extremes are not fun. There needs to be a middle ground.... But I’m happy with the way they did it in Ace Combat Zero,... you kind of see the ranking at the end of each mission. And it’s like OK, we’re not gonna give you the answer, we’re gonna give you the clues to the answer, you just gotta connect the dots, you know?”

-Subject #2

“Well of course, I want to know about it, I don’t want it hidden. But it doesn’t have to tell me right away, it could be in the middle of the game. I think it makes the game more interesting, that’s what I think.”

-Subject #1

“[M]aking the mechanics overt breaks immersion in the story. It reminds you you’re playing a game when you don’t really need to be. I’m aware hiding mechanics can conflict with maximizing player choice of course, which I also like, but if the game is story-centric, the conflict doesn’t seem too bad to me.”

-Subject #5

These responses seem to indicate that in terms of game design, something like an SNM should strive to remain in a safe “goldilocks” zone of effectiveness, which is bounded on one side by an immersion-breaking overttness, and on the other side by a game-breaking subtlety which leaves the player in the dark about how to properly play the game. This is akin to [42], where the design concept of Flow resides in a tune-able zone between overly frustrating difficulty and ease-induced boredom. As the testimonies in for this question seem to indicate, game designers may be better informed in their practices by more research into the conceptual effective zone of an SNM.

One response in particular, however, seemed to be unusually positively in favor of the level of stealth exhibited by the SNM in AC0. As Subject #7 explains:

“I’m glad it stayed hidden, because it just makes the experience that much more unique. You write your own game. You’re writing your own story, but you are unaware of it. I just feel that essentially, it’s better. It just keeps the uniqueness, the first time around that you play....In a way, it wasn’t just a customization sort of thing, it wasn’t just a system where the player could choose what path of the story he wanted to play, it...essentially told you what kind of player you were.”

-Subject #7

6.2.6 Perceived appropriateness of story-to-gameplay

Did you feel that the story rendered in AC0 fit you as a player? Why or why not?

Interviewees seemed to agree that for the most part, the stories that were rendered upon their various playthroughs of AC0 were perceived to be fitting their respective play styles. That is to say, interviewees agreed that the game stories

that were rendered as a result of their specific play decisions and styles were appropriate and not seemingly out of place/character, and the sentiment regarding this gameplay aspect was fairly unanimous, with the exception of Subject #1 who could not sufficiently recall enough of the story to comment meaningfully on this topic, so for the most part, at least in player interviews, it seems that our initial hypothesis that SNM is better for tailoring a narrative to a player, but ineffective for raising Replay Value was borne out.

7. Conclusion

In this thesis, we use a case study of the game *Ace Combat Zero: The Belkan War* to propose the CIMI Method, a new multidisciplinary approach to analyzing the effectiveness and dimensions of the narrative found in the game. We applied a Close Critical Reading approach borrowed from Literary Studies in order to understand the embedded narrative of a digital game as it exists in AC0. Based on that analysis we chose to focus on the narrative-building game mechanic of the Stealth Narrative Mechanic (SNM) for further objective analysis. In terms of the SNM, our hypothesis contended that a SNM is better for tailoring a Multi-Story-Path (MSP) narrative to a given player, but that it posed potential negative effects on the Exploratory aspects of Replay Value in games at large. In order to test our hypothesis in a time-feasible manner, we constructed the “Cube Invaders” prototype webgame of a relatively short duration to act as an isolation of the SNM for a user study. Furthermore, we used Individual Player Interviews of players who have had first-hand experience with an entire playthrough with the original source material of AC0.

The findings of an analysis of the Cube Invaders survey data and player interview testimonials is discussed in the subsequent Chapters.

7.1 Stealth Narrative Mechanic effectiveness for tailoring stories

The overall effectiveness of the SNM present in AC0 in terms of tailoring a changeable, embedded game narrative to a particular player on a given playthrough instance was tested in one way using the Cube Invaders prototype game. The survey data seems to reflect that within the scope of our obtained sample, the effectiveness of the SNM present in the Cube Invaders prototype game remains inconclusive. However, the obtained data set seems to indicate that participants who 1) play games more often and who 2) have a preference for story-centric games and genres tend to be more aware of game mechanisms which influence story development in MSP games. This seems to indicate that in subsequent studies, there is a need to further investigate user groups differentiated according to Gaming/Gamer Literacy.

There appears to be more discernable tendencies and indicators when looking at the AC0 player interview testimonials. Several of the interviewees seemed to indicate a positive response to the SNM system present in the original AC0 game, but variations within individual user responses also seem to point to the need to differentiate the more specific aspects of the game AC0. In other words, different players evaluate the quality of a story-centric game in according to different subjective standards. Some interviewees prioritized gameplay, while still others stated that variety of content was the most important factor for accounting for their opinion of effectiveness of the SNM. A clear majority of the interviewees indicated that the concept of Immersion was central to their enjoyment of a story-centric game. They indicated that AC0 excelled at maintaining game world immersion for them, and that the SNM approach to story evolution aided in preserving immersion. Subsequent studies on SNM conducted using player interviews as we have employed will need to account for a variety of player demographics and will likewise benefit from defining and differentiating the various “anchor factors” which gamers at large cite as significant for their enjoyment of games.

7.2 The Negative Effect of SNM on the Exploratory Aspect of Replay Value

The Cube Invaders survey data seems to unanimously indicate that a lack of awareness of the SNM will logically impair the Replay Value of a given game. All demographics in our obtained sample indicated a visible preference for wanting to be aware of any narrative-altering game mechanics.

Conversely, the player interview testimonials seemed to indicate that the SNM did not negatively affect the Replay Value of AC0 as universally as it was reflected in the Cube Invader data. Rather, the interviewee responses, while varied, still seemed to indicate a trend where a SNM could be helpful for Replay Value if such a SNM were tuned appropriately. Interviewees claimed that while a complete lack of awareness of bonus content in a game was usually not encouraging in terms of Replay Value, it was also not particularly discouraging either. With AC0 specifically, many interviewees indicated that the presence of the achievement

system (mission rewards) and a need to obtain more flyable planes were among the other significant factors which encouraged them to replay the game again.

8. Future Work

This Chapter will discuss that which still needs to be carried out in order to refine the CIMI Method for game narrative analysis, those issues and questions which arose out of our initial application of CIMI, as well as potential future avenues of academic investigation in terms of Game Studies at large.

We hope that by these efforts and hopeful speculations, we might invite others to join us in this investigation, so that we can write the next chapter of the Game Studies Story, for our story is far from over.

8.1 Refining the CIMI Method

This study, a preliminary application of the CIMI Method, was a hybridized attempt to borrow the best parts of the Narratological and Ludological approaches to Narrative Game Studies in conjunction with Information Science to understand a technology-based interactive narrative phenomenon. As first starts go, there were some lacking areas which only became apparent after the study had been conducted. Some of those areas had specifically to do with the high degree of newness inherent to the field of Game Studies itself.

We openly admit that the proposed CIMI Method and its initial application in this thesis is, at its heart, an attempt to hybridize a hard science and an aesthetic concept—to be able to measure an aspect of human subjectivity that has historically been infamously elusive in terms of actually being (for lack of a better term) observable. It was an attempt to quantify certain narrative aspects of an artform without reducing it to simply being a numerical metric, devoid of the humanity which is the very soul of the work itself. In saying this much, it becomes somewhat apparent that the use of both the information sciences and the humanities approaches will likely incur some kind of compromise. That is to say, while the information science portion of this endeavor seeks to quantify and observe a phenomenon, the subjective nature of the text (in this case, a narrative video game) prevents this from being completely and universally applicable to every video game. Even when presented within the confines of a single game, as it was here with AC0, the multiplicity of story paths and individual player interpretations will always present an anomalous case, much to the chagrin of the

information scientist.

On the other hand, the technological nature of video games, their systems, rules, goals, and their inherent composition as state machines also lends a significant degree of order to what would otherwise be a strictly aesthetic text. Therefore, the very technology which modern games is composed of actually offers some hope for being able to measure and observe the subjective phenomenon which it generates for the human players of the game. The CIMI Method, our attempt at hybridizing these two approaches, leverages the advantages of both fields in order to investigate the mystery zones of experience which the other science cannot venture into. Though the current incarnation of the CIMI Method has proven to be unable to fully understand the narrative experience of the game AC0 on this preliminary run, we will continue to work towards this hybridization of methodologies, which mirrors the very nature of the hybridized technological art medium that is the modern video game.

We foresee an iterative refinement process for the CIMI Method as we endeavor to apply it to other games and other game narrative-mechanic phenomenon. Though our data on this initial trial was not as clear-cut as we had hoped in terms of understanding the narrative phenomenon of the SNM in AC0, we are confident that this preliminary trial has positively informed our experimental and methodological design for the better and for future applications of the CIMI Method. We continue to contend that the CIMI Method will be helpful for Game Narrative Studies researchers in understanding game narratives better, and subsequent work will only serve to improve the CIMI Method as a whole.

8.1.1 Close Critical Readings

As it was mentioned prior, the use of close critical readings of texts is borrowed from the field of Literature Studies. Close critical readings, or so-called “deep dives” are characterized by one’s efforts to decode any literary symbols which may potentially be present within a given narrative text. To say that this method is any sort of science would be utterly false, because it simply is not a science—it is an art. However, it is because of this very fact that we contend that it is 1) necessary for our CIMI Method and 2) the first step of the CIMI Method.

Video games constitute a unique medium where both art and technology can

form an amalgam that is neither a technological work of art, nor an artfully-rendered technological tool, but is something altogether new and novel. Because digital games are essentially creative endeavors, the human aspect of games can only be ignored at the peril of the medium as a whole. Having cited as much, we continue to contend that subjective close critical readings are necessary in order to “feel” the narrative landscape and infrastructure of a given digital game.

Furthermore, close critical readings are helpful for scanning a given digital game for depth of material. Put simply, sitting down alone with a text in order to try and understand it in one’s own terms serves the purpose of vetting a particular game for potential significance. Close critical readings are in fact an essential and fitting first step for our proposed CIMI Method.

However, as close critical readings are not an exact, objective, or template-ready science, it can be considerably difficult to refine such a process. Additionally, as the critical close reading method is borrowed primarily from the realm of literary studies, it is for the most part tailored for use in the domain of static conventional media such as novels or film. With the medium of games, interactivity is key. As such, further refinements of the close critical reading method will require some significant amendments which account for the narrative plasticity inherent to the medium of games.

Investigating ways to refine close critical reading methods for interactive texts represents a potentially vast area of future study. As the medium/market of video games continues to evolve, seek innovation, and ride their own trends of change, trying to pin down a method for studying interactive narratives will become increasingly more difficult. But literary analysis methods have historically often relied upon historical context in order to be both fitting and effective for understanding certain texts, so too do we envision that there will be chances for the development of a living, growing toolset of subjective analysis methods for the medium of games. There is much fertile ground for the refinement and creation of new kinds of critical close reading methods for games.

8.1.2 Isolation of Game Mechanics via Game Prototyping

With this study we sought to make the study of the SNM time-feasible by recreating the mechanic in miniature, essentially isolating it from the rest of the game

so that we might test it with a larger number of players in a relatively shorter amount of time. However, as our Cube Invader data had shown, the data set we acquired was lacking in many ways.

In short, there still needs to be more space and time for the testing of different experimental prototype game setups. With this thesis, it was just a singular, preliminary effort, but in the future we hope to re-conduct the Prototype Game Isolation Mechanic with differing configurations, longer test durations in order to get a larger data sample, and for more opportunities to create game prototypes to isolate other game mechanics to test for things like achievement priority among players of AC0, or even to test mechanics in other story-centric games.

As each and every game title currently on the market has a specificity to it, this represents a fruitful area of study as we can test the mechanic isolation method on a wide spectrum of games, and iteratively with certain titles which are ripe with story-altering game mechanics.

Specifically with AC0, we would like the opportunity to either retune the parameters of the Cube Invaders game in order to conduct more revised and focused tests for the SNM in the future, and we would also like to design entirely different prototype games for testing SNM in AC0 if the situation allows. As our initial investigation in this thesis was not as detailed as we had originally hoped, it will be necessary to revise the Cube Invader game to dig more deeply into more aspects of the Replay Value Ecology and the SNM.

8.1.3 Interview Methods

As it was also reflected by the Cube Invader findings, individual player interviews should be conducted in further studies with more consideration for differentiated user groups, for example, interviews that seek out more game-literate demographics.

In particular, interviews with casual gamers tended to be less forthcoming and more ambiguous than those which were conducted with those respondents who classified themselves more towards the hardcore gamer classification. Interview responses for more hardcore gamers (who were also more game-literate) seemed to be more specific in terms of responses, and there was generally more material to obtain with such interviews. This is also advantageous because having a larger

sample (in terms of volume and quality, in this case) allows us to take fuller advantage of the interview methodology which is predicated upon exploratory question-and-answer-styled conversation regarding our research topic.

In the future, we also hope to incorporate not only more individual interviews for gaining insights into player experience dimensions, but we also hope to expand on to focus group interviews, akin to the methodology employed by [40]. We envision that a focus group methodology will not only be more forthcoming than individual interviews, but should also be more feasibly carried out with more popular video game titles such as with the Final Fantasy or Metal Gear franchise games.

In subsequent iterations/revisions of the CIMI Method, we must also be scrupulous of how best to formulate the question format in our Player Interview Questionnaires. While the framework utilized and proposed by [40] has proven to be feasible in our case on this preliminary trial, the flexible nature of the Player Interview method coupled with the variety of game genres/types/mechanics and the general range of human subjectivity at large should theoretically allow us as researchers to continually use the same procedure while allowing us the freedom to tailor each questionnaire accordingly. A certain degree of ambiguity in the Player Interview questions is desirable in such studies like this which deal with human subjectivity. Having cited as much, utilizing the same procedural format as [40] while altering the questions themselves to deal specifically with the given research goals will be necessary for refining this aspect of CIMI.

8.2 Questions and Issues raised by the CIMI Method

As with all preliminary studies, our first time with the CIMI Method yielded some unexpected results which indicated some intriguing and potentially useful clues as to the directions could take this research. Such clues are discussed below.

8.2.1 Regarding the Ecosystem of Replay Value

In particular, before conducting another application of CIMI to either AC0 or another story-centric game, we would like to revise our theoretical concepts regarding the Ecosystem of Replay Value. As it was mentioned, prior, Replay Value

is not a singular degree or factor, but rather an entire ecosystem of factors which differ by number and variation depending on a specific game and a player's subjective experience with that game. In our study with AC0, we were able to make some preliminary inferences regarding only but a few aspects of Replay Value, where gamers may be encouraged to replay a given game based on the promise of bonus, as of yet undiscovered material (Explorability), an effort to obtain game-designated accomplishments (Achievements), a need to witness everything the game has to offer (Completionist), or some combination of factors which resulted in the game being sufficiently fun to play repeatedly (Overall Enjoyment). In a sense, their motivation to replay a game would be based on the promise of exploration.

However, Replay Value is influenced not only by the promise of new material yet to be explored, but also by other aspects such as Achievements and Overall Enjoyment Factor. With the Achievements factor or Replay Value, a player may replay a game in order to collect all of the designated achievements offered by a game, such as a high score or a feat such as completing a level without taking any damage. Overall Enjoyment Factor refers more to game experience and fun as a whole, wherein a given game may be replayable simply because its mechanics were balanced ideally and the game is simply fun to play again. It could be sufficiently argued that that is the case with the original Super Mario Bros., Tetris, Final Fantasy, all of which grew into successful episodic franchises on the merit of their inherent entertainment factor.

In essence, to understand the ecosystem of Replay Value and how better to apply and enhance it is to equally understand how to increase the marketability and profitability of a game, and this is in turn a very useful area to investigate. Therefore, understanding the ecosystem of Replay Value will inevitably mean investigating all of the various aspects of Replay Value further. In particular, for the time being, the dimension of "Overall Enjoyment" is merely a theoretical placeholder which accounts for many factors working in concert to a positive Replay Value effect—we have purposefully designated just such a factor as an allowance to the possibility of as of yet undefined dimensions in the ecosystem of Replay Value.

8.2.2 On The Concept of Immersion

Another area of potential study which had surfaced during the player interview data set was that of the concept of Immersion. In particular, when referencing their thoughts on the SNM of AC0, many interviewees thought that the subtlety of the SNM was not necessarily simply a good or bad thing, but rather a game mechanic which required tuning and balance in order to preserve immersion in the game. Basically, having an overt narrative mechanic would serve to break immersion by informing the player of the fictive nature of the game, while having too much subtlety and covertness would preclude the player of understanding all the ways in which the game could potentially be played. In discussing this aspect of games, it will be intriguing to further investigate and flesh out the concept of immersion as it pertains to narrative in games. This is further supported by the fact that immersion seemed to be an important factor to many of the interviewees of AC0.

8.2.3 Testing the thresholds of SNM

In terms of further investigating SNMs in general, more work towards defining a threshold for determining the effectiveness of an SNM (or any other narrative-altering mechanic, for that matter) is required. This study was just a first effort to try and tease out the dimensions of how an SNM works, how it is received by players, and how potentially effective it might be for story. Subsequent studies regarding SNM should aim to understand the varying degrees of just how stealthy an SNM can be, and what happens during those different gradients of covertness. To that end, it may be a good idea to continue testing SNM using the mechanic isolation method and altering various aspects of either the ranking system or the narrative feedback system in order to further explore these dimensions. Furthermore, we could also work towards establishing a methodology for setting up a control group who has absolutely zero awareness of the SNM as well.

8.3 Addressing Game Studies at large

In designing and applying the CIMI Method, it became evident that, essentially-speaking, any narrative expressed through an interactive game was no mere static

tale, but rather a living subjective phenomenon with an inherent potential for capricious interpretation based on any given mechanic, playthrough, or player perception.

The field of Game Studies in terms of Narrative is very real, and the potential research problems varied and many. As such, we propose to further explore the dimensions of what actually constitutes a narrative phenomenon in digital interactive games. As we contended in this thesis, games are significant, and the stories told through them are potentially just as important, and as such deserve academic qualification. But with future efforts in this vein, we wish to more concretely demonstrate these contentions by investigating the following facets of game narrative in order to both further define and understand just what constitutes an interactive game narrative experience/phenomenon, and to discover how better to study this phenomenon.

8.3.1 Towards A theoretical model for Immersion in interactive media

Immersion is the idea that the player is fully involved and may feel actually present in the world of the game. It is a key concept of fiction and fictive experience, and more importantly, oft-referenced by interviewees for our work on AC0, indicating that it is indeed of some considerable value to real gamers. While work on theories of Immersion has been done in Literary Studies, no model yet currently exists that accounts for technology-enabled interactive media. We contend that having a model of Immersion for interactive narratives in games (or at least being able to more sufficiently understand the role that Immersion plays in terms of both narrative and entertainment factor in games) will be particularly useful for the study of the narrative phenomenon in games, and this benefit also extends beyond just the academic and can potentially be equally informative and useful for Game Design. Understanding a phenomenon such as Immersion for Game Design can be just as helpful for developers trying to make innovating games, akin to how [42] is now widely regarded in the game industry as having been concretely helpful in terms of understanding the concept of Flow in game design [43].

8.3.2 Identifying and defining the dimensions of Replay Value

Central to increasing sales for games, Replay Value, or the degree to which a game will be replayed by a player, is only now nebulously understood at best. Some factors which influence Replay Value have been identified, but a theoretical model for those functions in game design and marketing which actually affect Replay Value are yet unknown. This thesis began to address this gap in research, but more work can be done. Understanding the ecosystem of Replay Value, as with understanding the concept of Immersion, can help researchers and developers harness the power of that concept to create better and more commercially-successful games.

8.3.3 Revision of Narratological Approaches

Narratology is effective for understanding the depth of meaning of static conventional media, but its application to dynamic digital media and games is still lacking a proper consideration of both the plasticity and interactivity inherent to the target medium of games. Furthermore, it is still somewhat unclear which of Narratology's many literary analysis tactics works best (or not at all) for game narratives. With our attempt at CIMI in this thesis, we were able to at least identify one effective literary device/game mechanic relationship, but any given game title may possess any number or combination of such relationships, all to varying degrees of narrative finesse. So to start, we contend that more of these types of Narratological approaches must at least be tried on games in order to identify which of those approaches will yield the best results for whatever a given researcher may be looking for. As it functions with traditional Literary Studies, for example, based on a given set of textual clues and symbols, a Literary Studies scholar may adopt a Marxist perspective in order to interpret a particular text, and perhaps to great effect. However, the usage of that same Marxist philosophy on a different text may in fact yield nothing of value in terms of meaning. In short, this example is best served by the adage, "the right tool for the right job." As it stands currently, Narratology in games is a great many tools, but the job is somewhat still unknown, and as such, the right tool for the job is proportionally unknown. Considering this, there is very much work that remains to be done to revise Narratology for game narratives.

8.3.4 Theoretical distinctions between “Story” and “Narrative” in games

In the Player Interview data set we obtained, Subject #7 raised a very intriguing point that went unnoticed during our Close Critical Reading step of CIMI:

“Your character does not say one word through the entire game, and that is why they call him ‘Cipher’...the name means, ‘Someone of no importance,’ which I find ironic but in a way fitting for the name of the main character because even though you [the player] are the main character, you’re just a catalyst...As a Cipher, the fact that they gave this character no personality, it’s much easier to integrate your own personality...Anyone can relate to a classic, Captain America-type of soldier, but if you give that soldier a personality, you can’t relate unless you have his personality. Now, with someone like Cipher, who has no personality, you’re able to create your own and...implement your own personality. Which later ties into being able to get more emotion out of the story. When Larry Foulke [AC0’S main antagonist] says, ‘He was my buddy,’ you could either take it as ‘He was Cipher’s buddy’ or ‘He was MY buddy.’”

-Subject #7

In essence, Subject #7 found an interesting narrative device which other Game Studies researchers and game designers have been endeavoring to identify, and that is the distinguishing factor between what counts as a “Story” as opposed a “Narrative” in games. In [44], Jackson proposes a 4-perspective model for understanding narrative in games. Of the 4 perspective types, Jackson identifies the “Avatar” type to be the one in which the player assumes the role of a character with no personal feelings, lines of dialog, or personality to begin with, and is essentially a blank slate. This is, as Jackson theorizes, done in order to have the player use the character as a direct conduit or an empty space to inhabit for the purposes of experiencing the game narrative. This stands in contrast to another of Jackson’s perspective types, that of the “Persona” type, which has the player assume the role of a character with a pre-established personality and dialog lines. With AC0, the perspective type is most decidedly that of the Avatar in Jackson’s model, and as Subject #7 contends, functions as the empty “Cipher” by which

the player can both experience the game narrative and exert their own will/write their own story through the SNM.

In [45] Xevious creator Endo and Square-Enix Games Researcher Yanase contend that the difference between what they dub a “Story Game” and a “Narrative Game” is that the Narrative game is one in which the player character is empty and silent, allowing the player to insert themselves directly into the game in order to experience the fiction contained (or generated) therein, exert their presence in the game world via interaction, or influence the fiction of the game. By contrast, a Story Game would be one wherein the player character is already fleshed-out, and you as the player are merely guiding the character to accomplish the goals of the game. The fundamental difference between these two types, akin to the Avatar vs Persona perspective types of Jackson, is that of authorial agency—whose story are you experiencing in this game? Is it the protagonist’s story, or is it your own as the player? With the former, it is a Story, and with the latter, it is a Narrative.

This nuanced distinction in Narrative Game Studies nomenclature has been gaining in notice and appeal in recent years, and [45] even points to the recurrence of the topic as a critical point of discussion at GDC 2013’s Game Narrative Summit. They contend that this indicates the importance of the Story vs. Narrative distinction in games, and they further encourage Japanese developers to pursue the path of Narrative over Story games.

As all of these things indicate, further study into Story vs Narrative games can potentially serve as a fruitful direction of research, especially in terms of game design and Narratological methods of interpretation.

8.3.5 Embedded vs. Emergent Narrative

This has become somewhat of a hot topic in very recent years. Embedded Narrative is essentially the story which is being offered in the game, whereas Emergent Narrative is the story which is being interpreted, reconstructed, or somehow evolved in the mind of the player. As an example, you can think of internet forum discussions, comment threads, and fan fictions as types of Emergent Media. Social Networking sites like NicoNico Douga and YouTube present fertile grounds for the collection of data on how a “Seed Text” (original game) can inform and

inspire the emergence of new collectively-constructed narratives via the internet and social media network sites. What is an embedded narrative in an interactive game? What external media counts or qualifies as emergent narrative? How are they related? At what point does embedded narrative transition into emergent narrative—is there an observable, definable threshold? Does emergent narrative have meaning, or likewise, can emergent narrative serve a higher cultural function as more conventional static media such as Literature or Film do? Does emergent narrative cycle back into or become the seeds of another embedded narrative? The questions remain intriguing, pertinent, and more importantly, currently unanswered, and they indicate how fruitful a study avenue this could potentially be.

8.3.6 Emergent Narrative in the Internet Age

As it was mentioned above, the phenomenon of emergent narrative in recent years has been advancing rapidly due in large part to the internet and social media. In particular, these technological infrastructures are enabling spontaneous communal narratives. In recent years, peculiar examples of said spontaneous communal narratives have been surfacing on social media and, for instance, Amazon product reviews, where for example, all of the product reviews for some curious item are falsified—fictitiously written in order to perpetuate and develop some kind of communally-constructed “inside joke” of sorts, oftentimes to humorous effect. The intriguing thing about this spontaneous narrative phenomenon is that participants are not instructed to do this, they simply visit the page, see what is occurring, and contribute to the growth and development of the narrative in progress with supplemental reviews/comments of their own. Two recent examples of this spontaneous communal narrative are [46] and [47].

Granted, these are not games in the traditional sense of the word, but they certainly do constitute a collaboratively-built and maintained spontaneous textual form of play carried out over a digital interactive medium. We contend that as the internet continues to become a more convenient place for participatory discussion, so too will the phenomenon of the spontaneous communal narrative continue to emerge and spread. As a living facet of emergent narrative in the digital internet age, we feel that this is worthwhile to investigate, particularly for

understanding how groups of people construct a narrative or fiction in real time. This is a phenomenon that has not really happened or been possible in the past, so taking steps to understand this phenomenon now can potentially be considered pioneering studies in Game Narrative Studies in spontaneous, participatory narrative-building over the internet.

Yet regardless of the medium, whether it be video games or the internet, the fact remains that modern computing power and global connectivity have enabled the rendering of flexible, responsive narratives in real time. Narrative is important—it gives context to games and technology in a way that elevates both mediums as an art form. For example, without narrative, a game is merely a string of tasks, bereft of meaning. And meaning is everything. Furthermore, current trends, such as the rise of Massive Multiplayer Online (MMO) games and SNSs like NicoNico Douga and twitch.tv, show that the borders between video games, the internet, and plastic communal narratives are becoming increasingly diminished, with significant overlap occurring between all three of these human activities. Is this phenomenon indicative of a technological/artistic convergence? Are we heading for a world with no boundaries, where games, the internet, and narrative at large inhabit the same media space as a synergistic system fueled by the curiosity and imagination inherent to every human being?

We like to think so.

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9. Appendix

This appendix section contains the original research questionnaires used in this application of the proposed CIMI Method, with the game Ace Combat Zero: The Belkan War (AC0) as the Candidate Text for this study. Cube Invaders participants were prompted at the beginning of the game about the existence of the research survey to follow the conclusion of the gameplay, and were automatically directed to the survey at the end of the last level. Individual player interviews were conducted on a one-on-one basis over skype or in-person. We received appropriate permission from each interviewee to record the interview as an audio mp3 file for reference and iterative review, and we informed the interviewees that their privacy would be protected at all times.

9.1 Cube Invaders Survey Questions

1. What is your gender?

Male

Female

2. What is your age?

1-10

11-20

21-30

31-40

Over 40

3. What type of gamer are you?

5 - Hardcore Gamer

4 - Fanatical Gamer

3 - Average Gamer

2 - Casual Gamer

1 - Non-gamer

4. About how many hours a week to you play video games?
- 40+ hours a week
 - 20 30 hours a week
 - 10 20 hours a week
 - 0 10 hours a week
5. What type of games do you enjoy?
6. In your opinion, what is one of your favorite games?
7. About the “Cube Invaders” game, how difficult do you feel the game was?
- 5 - Very difficult
 - 4 - Difficult
 - 3 - Average
 - 2 - Easy
 - 1 - Very Easy
8. Were you aware that the Cube Invaders game news headlines were changing in response to your score?
- Yes, I was aware.
 - No, I had no idea.
 - I don’t know.
9. Did you feel that the responses in the news headlines between levels was a fair reflection of your performance in the game?
- 5 - Yes, the news headlines perfectly reflected my play style accurately
 - 4 - Yes, the news headlines mostly reflected my play style.
 - 3 - I have no opinion of the news headlines/I don’t know.
 - 2 - No, the news headlines did not really reflect my play style.
 - 1 - No, the news headlines were not at all accurately reflecting my play style.

10. In general, do you prefer it when games have multiple story paths?
- 5 - Yes, I completely prefer this.
 - 4 - Yes, I mostly prefer this.
 - 3 - I don't really have an opinion about this.
 - 2 - No, I don't really prefer this.
 - 1 - No, I don't prefer this at all.
11. In general, would you prefer to know about the existence of multiple story paths in a game (and the ways to access the various content) before you start playing?
- 5 - Yes, I would love to know about there being multiple story paths and how to get them before starting the game.
 - 4 - Yes, I think it would be nice to know about there being multiple story paths and how to get to them before starting the game.
 - 3 - I don't really have a preference either way.
 - 2 - No, I don't really prefer to know about there being multiple story paths in a game, or how to get to them prior to playing it.
 - 1 - No, I would much rather not know that there are multiple story paths in a game, or how to get to them before playing it.
12. If you knew exactly how to change the story in a game with multiple story paths, would that make you want to play the game again?
- 5 - Yes, absolutely.
 - 4 - Yes.
 - 3 - I don't know.
 - 2 - No, not really.
 - 1 - No, not at all.
13. Are there any other comments you have about the Cube Invaders game or games in general?

9.2 Player Interview Survey Questions

1. What type of gamer are you (scale of 1-10, 10 being hardcore gamer)
2. What is your approximate age range (ie. 10-20, 20-30, etc.)?
3. Why do you play the Ace Combat series games?
4. In your opinion, what did you think AC0 did well?
5. What did AC0 not do well?
6. How necessary did you feel the story of AC0 was (scale of 1-10, 10 being absolutely necessary) Why?
7. What did you think about the ranking system?
8. Did you know that the ranking system affected the type of cinematic you got?
If so, when did you realize that?
If not, what do you think about this game mechanic?
9. Would knowing about this game mechanic while you were playing it make you want to play the game again? Why or why not?
10. Do you feel that it is better for the game to keep this information hidden from you, or would you like to know about it while you are playing? Why or why not?
11. Did you feel that the story rendered in AC0 fit you as a player?
12. Any comments about the game's story or mechanics?