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The Didactic Potential in Science Fiction Video Games

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Abstract

This paper examines how science fiction video games create unique learning experiences through interactive engagement. Drawing on Ian Bogost's procedural rhetoric and Espen Aarseth's ergodic literature, and applying Darko Suvin's concepts of cognitive estrangement and the novum, this paper establishes a framework for analyzing the didactic potential of video games. Three case studies are examined: *Papers, Please*, *Fallout: New Vegas* and *Cyberpunk 2077*, each featuring soft SF themes of societal critique. The analysis demonstrates that video games possess significant didactic capacity: *Papers, Please* delivers focused lessons through restrictive gameplay; *Fallout: New Vegas* enables varied moral exploration through sandbox freedom, and *Cyberpunk 2077* illustrates how ludonarrative dissonance can dilute didactic potential. The paper concludes that video games offer a unique form of learning, one in which players do not observe lessons but enact them.

Introduction:

Video games are a medium that possesses didactic potential distinct from other media, rooted in their interactive framework. Unlike literature, art or film, video games require active participation; the audience, hereafter referred to as "player(s)", not only observes, but enacts alongside the narrative. This interactivity creates opportunities for experiential learning that remain underexplored in academic discourse. Therefore, this paper will examine how this interactive framework can create a didactic experience for the player, focusing specifically on science fiction video games. SF pairs well with interactive media; its capacity for social critique through estrangement complements the participatory nature of gameplay. With the focus established, the paper will analyze three SF video games: *Papers, Please*, *Fallout: New Vegas* and *Cyberpunk 2077*.

More specifically, the paper examines how each of these games provides a didactic lesson, whether through a tailored, specific experience or through a learning space where multiple didactic lessons can emerge. The guiding research question for this examination is: How do science fiction video games create unique critical learning experiences by integrating SF's speculative critique with gaming's interactive narrative structure?

To answer this question, the paper employs both video game theory and SF theory to build the necessary framework for analyzing the games. For video game theory, the paper will primarily use Ian Bogost's concept of procedural rhetoric and Espen Aarseth's concept of ergodic literature, both critical for understanding interactive engagement. For SF theory, the paper applies Darko Suvin's concepts of the novum and cognitive estrangement to understand how SF creates societal critique, supplemented by Robert Scholes and Adam Roberts to update the

framework to contemporary standards. Finally, alongside successful cases, the paper analyzes a failure case to test the framework's limits.

Why choose these specific games? First, each game contains elements of soft SF, focusing on the critique of real-world systems, from authoritarian regimes to post-apocalyptic wastelands born from mankind's destructive nature, to dystopian cities warped by corporate greed. Beyond their SF elements, each game was selected for specific analytical reasons. *Papers, Please* is a small, linear game providing a tailored experience and focused didactic lesson. *Fallout: New Vegas*, in contrast, is an open-world game that provides greater variety in player choice and a lengthy narrative, creating an experimental space where multiple didactic lessons can emerge. Finally, *Cyberpunk 2077* blends elements of both approaches, but it will be examined as a failure case due to complications between gameplay and narrative. Together, these three games demonstrate the varied ways video games achieve, or fail to achieve, their didactic potential.

The paper first outlines the theoretical framework used to analyze the three video games, establishing the foundation for analysis. This is followed by a method section detailing how the framework will be applied, incorporating Hunicke et al.'s MDA framework to explain how procedural rhetoric and didactic lessons emerge. Additionally, Clint Hocking's concept of ludonarrative dissonance is used to explain how games can fail to achieve their didactic potential. The analysis is then divided into three sections, each examining one of the games. The first section focuses on *Papers, Please*, applying the established framework in its entirety. The second analyzes *Fallout: New Vegas*, comparing how its open-world design creates didactic lessons differently from *Papers, Please*. The final section examines *Cyberpunk 2077* as a failure case, using ludonarrative dissonance to analyze how the game obscures or dilutes its didactic

potential. With the research question established and the paper outlined, the thesis can begin in earnest.

Theory

Marshall McLuhan

The paper begins with media theorist Marshall McLuhan and his theory of the medium as fundamental to meaning-making in literature. In his book, *Understanding Media: The Extensions of Man*, McLuhan argues that "the medium is the message" (McLuhan 1). The concept describes how the medium fundamentally affects its content and shapes human experience and social organization. McLuhan emphasizes examining "the psychic and social consequences of the designs or patterns as they amplify or accelerate existing processes" (1). One of his best examples is the electric light, which demonstrates why the medium itself is important to examine, because it is a medium without a message. Had the example been a book or film, it would have given a clear association to another medium, diverting our attention away from the medium itself. The light bulb is, therefore, strategic because it has no traditional content to be associated with, directing our attention to its transformative effects on society and how it structures human life and culture.

From the doctor operating on patients to the baseball game occurring at night, the medium of the electric light has transformed society by fundamentally reshaping how humans interact with darkness. By artificially extending the day, the light has reshaped the city, social and systematic structures: "This fact merely underlines the point that "the medium is the message" because it is the medium that shapes and controls the scale and form of human association and action. The content or uses of such media are as diverse as they are ineffectual in shaping the form of human association" (McLuhan 2). Video games operate on a similar principle. Just as the light bulb's significance lies in its ability to reshape human engagement and activity, video games'

significance lies in how they transform engagement and interaction with the text. Instead of telling a story that is passively absorbed, video games focus on how engagement can create other forms of storytelling, where the medium fundamentally reshapes how we engage with literature. The medium is therefore an important factor to consider, and emphasizes that video games are a unique form of storytelling within literature, worthy of further consideration.

McLuhan's theory of the medium as a message provides the foundation for our argument that video games have altered the narrative structure within literature (McLuhan 2). From interactivity and agency to spatial and embodied narratives, video games transform the audience from passive receivers into active participants. The medium changes the engagement with the text and allows players to be co-creators of the narrative.

This co-creation does not mean players write the story alongside developers, but that video games require active effort to experience the narrative. Unlike passive media, where the story unfolds regardless of audience engagement, video games make participation meaningful; player choices shape outcomes, creating a personal relationship to causality and consequence within the story. Furthermore, video games teach players a systematic approach to narratives, with sequences and events that reshape how we understand cause and effect in stories. This transformation, from passive reception to active participation, establishes video games as a fundamentally different narrative medium, one whose properties warrant close examination.

Ian Bogost

Having established why the medium of video games is important, the paper will examine how they produce their didactic message. For this purpose, I will turn to video game designer and academic Ian Bogost. In his book *Persuasive Games: The Expressive Power of Videogames*, he

provides a crucial framework for the paper's main argument. His central theory is that coding persuades and argues through their medium (Bogost ix), and he coins the term "procedural rhetoric". The term describes how computational processes persuade through their underlying code and rule systems. However, Bogost's term is not exclusive to video games; any systems that use procedures, coded rules that model real-world behaviors, can make arguments on processes. At its core, procedural rhetoric argues and persuades through code itself. Video games are particularly effective vehicles for procedural rhetoric because they situate players within these systems. From complex moral dilemmas to resource management to systemic choices and consequences, video games create opportunities for learn through enacted experience rather than direct instruction.

Procedural

The term is broken down into two categories: "procedural" and "rhetoric", and it is important to understand each term separately before examining their combination. Procedural refers to the general concept of procedures and is defined as the way things work: the methods, techniques and logic that drive the operation of systems, from mechanical systems like engine systems in servers to organizational systems like high schools to conceptual systems like religious faith (Bogost 3). Bogost argues that computer code can emulate and implement these processes and then execute them. However, code creates conditional operations: processes that execute only when specific conditions are met, resulting in either success or failure. Video games make these conditional processes visible and interactive.

For example, in the video game *Fallout: New Vegas*, the dialogue tree is a system that reflects morality. The tree is a coded mechanism that presents players with different options when

interacting with NPCs. Through the choices made and the choices not made, the game responds to the player's actions, triggering a branching path of consequences. Morality is therefore not read or explained to the player, but experienced through the execution of code. These procedures model real-world moral systems, demonstrating Bogost's key argument about how video games become argumentative through code.

Yet these procedures are not neutral mechanisms. As Bogost notes, while computers execute procedures mechanically, the code itself is human-designed and therefore embeds a human perspective on how the systems function (Bogost 5). Code does not simply process data, but models how designers understand the world. This ties back to McLuhan's argument that the medium shapes meaning, just as the electric light restructured human activity through its form rather than content, video game code restructures how players engage with systems through its procedural design. The procedures in video games or "gameplay" outline rigid structures that players must follow or face penalties (4). Through navigating these structures, players are taught rules and lessons, indicating that gameplay procedures connect to reality.

For example, the game *Overcooked 2* teaches players about teamwork and communication not through narrative or dialogue, but through its procedural constraints. The game imposes rigid structures: a complex kitchen with limited space where no single player can complete all tasks alone. These procedures force players to communicate, delegate roles and coordinate actions to succeed. The game teaches collaboration by making it mechanically necessary, rather than explicitly instructing the players. This is procedural rhetoric in action: the rules themselves make the argument. Similarly, *Papers, Please* teaches players about resource management and moral complexity through limited resources, multiple forms of punishment and frequent failure states.

The game demonstrates how systemic constraints complicate moral decision-making. Both examples illustrate how procedural systems in games model real-world logic.

This connection is purposeful. Bogost notes that procedures exist beyond video games and coding; the procedural structures are also found in everyday life. For example, a store's return policy is a procedure of commerce; traffic laws are procedures of social order. These systems describe a logic humans follow, with rules that penalize those who break them: "When we do things, we do them according to some logic, and that logic constitutes a process in the general sense of the word" (Bogost 20). Video games simulate this logic directly. Where books describe procedures and films depict them, video games require players to navigate procedural constraints firsthand. The experience of consequences, the lessons learned through failure, the iteration of retry and success, these are real-life processes taught through the video game medium. This interplay between code and lived experience reveals why examining video game procedures matters: they are inherently persuasive and argumentative.

Rhetorics

Bogost notes that not all procedures carry rhetorical weight. Some are purely functional; others communicate arguments and values. Understanding which procedures hold persuasive potential requires examining how they convey meaning. Therefore, we turn to the second part of Bogost's framework: rhetoric.

Bogost begins by outlining the history of the word rhetoric. Originally coined by Aristotle, the term described how ethos, logos and pathos were used to persuade an audience through organized and eloquent expression to influence public life, law and civic ceremonies (Bogost 18), and was linked to both the written and spoken word. But the concept of rhetoric has evolved

since Aristotle and now encompasses a larger definition. Kenneth Burke is one of several theorists who have redefined the term, and his theory proves important for Bogost's argument.

Burke redefines rhetoric as not only constrained to language and oral persuasion, but is also extended beyond it to address a core aspect of human nature: the need for identity or identification (Bogost 33). His expansion of rhetoric is important because procedures are not constrained by language, and therefore, from a traditional sense, would be unable to convey meaning. However, Burke argues that non-traditional forms of rhetoric exist beyond language, which allows Bogost to claim that procedures can serve as a means of identification and communication, thus becoming rhetorically persuasive.

Therefore, procedures constitute a unique form of rhetoric, a mode of communication distinct from, yet comparable to, other modes of persuasion. For example, the use of visual rhetoric, a non-verbal form of communication, uses persuasive imagery to make an argument or persuade. However, visual rhetoric has often been harshly judged as an inferior tool of communication, since the written and spoken word is more closely connected to actual thought (Bogost 36). This implies the argument that the written word is the superior form of persuasion; however, as Bogost states, visual rhetoric is one of many emergent fields within rhetorics, and is as academically relevant as written or oral rhetorics are, when it comes to persuasion (37). This is important, as Bogost's procedural rhetoric is also non-verbal, and therefore needs to persuade through different modes.

Digital rhetoric offers another precedent. As James P. Zappen argues (cited in Bogost), digital rhetoric transforms traditional rhetoric practices for new platforms: "Other digital rhetoricians likewise focus on the use of digital computers to carry out culturally modified versions of

existing oral and written discourse; letters become emails, conversations become instant message sessions" (Bogost 38). This establishes that rhetoric can evolve beyond spoken and written language. Like digital rhetoric, procedural rhetoric operates through systems and rules rather than language, yet can be equally persuasive.

How Video Games Become Rhetorical

Each mode of rhetoric persuades and constructs arguments differently: written and oral rhetorics persuade and argue through spoken or written language. Visual rhetoric's arguments through representation, and digital rhetoric's attempt to adapt both of these modes into a new platform. However, procedural rhetoric is inherently non-vocal and is unable to express its arguments through the visual spectrum. Instead, it showcases its argument through enactment. Via the procedures themselves, the player can interpret and experience how code can be argumentative. To return to the *Overcooked 2* example, the game does not persuade orally, in writing or visually that you must work together, but rather through its restrictive gameplay. The argument is created by working within its restrictive procedures, overcoming the game's challenges as a team and players understand that teamwork is important, which allows each individual to more easily overcome their task.

However, Bogost notes that not all procedures carry rhetorical weight (Bogost 5). For example, the classical game of Tetris challenges the player to stack and match different geometrical shapes and see how far they can progress through the game's levels before failure. Although challenging and entertaining, it is not argumentative. Procedural rhetoric models real-world systems or human experiences, whereas Tetris is designed around abstract spatial structures that are far removed from real-world logic. In contrast, the resource scarcity procedures in *Papers, Please*

model economic pressure systems in an authoritarian state, designed to reflect real-world conditions. Likewise, *Overcooked 2's* restrictive gameplay models real-world teamwork and communication challenges. The distinction lies in what the procedures simulate: abstract challenges or real-world systems.

The Argument is in the Process

Having established and outlined both the procedural and rhetorical, we arrive at Bogost's main argument and synthesis of the two. Procedural rhetoric asserts that procedures are inherently argumentative and not merely a vehicle for content, but persuasive through their logic and constraints. Procedures, also known as gameplay in video games, are executed by the code and enacted by the player. It is the concept of cause and effect: the player enacts gameplay by making choices within the system rules, and through this enactment, meaning emerges. Bogost's McDonald's video game exemplifies this. The player cannot succeed without exploiting the system: deforestation, enabling animal cruelty or corrupting officials through lobbying. The game never explicitly instructs or teaches these actions to the player; rather, the interconnected gameplay systems make them mechanically beneficial, and by exploiting the system for overall beneficial gains, the gameplay argues that "McDonald's business model is unethical" (Bogost 42-43).

Simulation vs. Representation

To better understand how procedural rhetoric makes an argument, Bogost describes the concept of simulation gaps. Instead of representation through written, oral or visual rhetoric, procedural rhetoric makes an argument through simulation: "I have argued that the ontological position of a videogame (or simulation, or procedural system) resides in the gap between rule-based

representation and player subjectivity; I called this space the ‘simulation gap.'" (Bogost 43). Code cannot create complete rhetorical arguments alone; it relies on players to make connections by filling these informational gaps.

Simulation gaps are where meaning and argumentation are made. For example, *Papers, Please*, at its core, is a game about managing limited resources. The game’s argument emerges from this constraint. It does not explain why limited resources (money and time) create morally complex scenarios; instead, it presents complex moral dilemmas through gameplay challenges. Making mistakes and having limited time to complete a work shift reduces the money the player earns. Money is needed to pay bills that increase as the game progresses, keeping your family warm and fed. Money is, therefore, an essential resource for your family’s survival, creating constant pressure, since losing too many family members forces a game over. The game also presents the player with moral choices that boil down to saving a life or maintaining or gaining resources, but never explains why this dilemma matters. Instead, it relies on players’ subjective understanding: they fill the simulation gap by drawing on real-world experiences of scarcity, survival and ethical compromise. Through this enacted exploration, the game articulates its argument (Bogost 226).

These simulation gaps require player engagement to create meaning, which Bogost describes as an enthymematic nature: “the audience must fill in” (Bogost 47). Players do not passively receive arguments; they actively construct meaning through interaction with procedural systems. Game over screens, resource depletion and gameplay changes (positive or negative) function as rhetorical moves, teaching players through enacted consequences rather than explicit instruction, demonstrated by the *Papers, Please* example. Players persuade themselves through the enacted gameplay, rather than being told what to think. Meaning is created through player agency, and

Bogost argues that the experience can feel more authentic and be retained more effectively than information received passively (45).

Procedural Tropes

Bogost also argues that procedural rhetoric develops patterns in the same way verbal rhetoric developed metaphors and metonymy. For instance, resource management can be debated in terms of scarcity, as seen in *Papers, Please*, or branching paths can be discussed in terms of agency or determinism, as seen in *Fallout: New Vegas*. Optimization puzzles can argue efficiency versus ethics, as seen in Bogost's own McDonald's example (43), or inevitable failure states that highlight systemic problems. These procedural tropes help players quickly recognize and understand familiar systemic arguments.

Just as verbal rhetorical tropes appear across different forms of communication, procedural tropes manifest across different interactive platforms, from algorithms to simulations to software interfaces. Video games in general offer a particularly well-suited platform for analyzing arguments regarding social structures. However, it is important to note that other forms of media can offer the same critique. The critical distinction is not what stories video games tell, but how their interactive framework shapes the audience’s experience. This interactive engagement may not work for all audiences; some players achieve a deeper connection with procedural arguments while others fail to engage with the medium. For those who do engage, however, the enacted experience creates a distinct form of learning and critique.

This deeper interaction is achieved because video games are coded around their procedural arguments to be overt and interpretable (Bogost 45), and often, video game designers purposefully design their code around player interpretation. Video games are also engaged with

current social or cultural issues of their time, allowing a clear analysis of specific social systems. Finally, video games can create player engagement through their enthymematic nature. The player creates meaning by interpreting the procedural system, making this a uniquely participatory mode of argumentation. This makes Bogost's theory well-suited for analyzing SF games. SF as a genre also deals with real-world systems and human experiences, which will be explored further in the SF theory section. Paired with procedural rhetoric, it becomes a unique combination for analyzing real-world social structures through interactive and systematic engagement.

Ergodic Literature

To help strengthen Bogost's concept of procedural rhetoric in video games, I will examine the theorist Espen Aarseth. In his book *Cybertext: Perspectives on Ergodic Literature*, he outlines the importance of video games as a unique form of text through his concepts of cybertext and ergodic literature. The two concept describes how player enactment in video games is achieved and the profound impact it has on literature, grounding procedural rhetoric in the mechanics of player interaction.

Aarseth describes cybertext as a mechanical organization of text, positioning the intricacies of the medium as a central part of the text (Aarseth 1). He uses the example of adventure books, the I Ching and text-based computer games to illustrate the principle that text carries different forms of meaning, dependent on its presentation. Within cybertext, Aarseth identifies ergodic literature (2), texts that require non-trivial effort to traverse. This non-trivial meaning is better understood by examining the etymology of "ergodic": ergon in Greek means "work" and hodos means "path" (1), understood as working along the path. It is not simply turning a page in a book (a

trivial effort); it is that the reader's choices and actions determine what text the reader encounters.

Where Bogost focuses on how procedural rhetoric creates impactful argumentation, Aarseth examines the mechanics behind this interactivity. Specifically, how the non-trivial effort required to traverse a text shapes its meaning. Together, these frameworks complement each other: Bogost explains how interactivity becomes argumentative, while Aarseth explains how interactivity shapes engagement. Combined, they provide the theoretical foundation for understanding how video games function as didactic media.

Ergodic literature often features non-linear storytelling, which is texts with multiple paths, choices and consequences. Aarseth uses the analogy of the labyrinth (11) to describe a text that is multicursal in nature. For video games, this means that ergodic properties and non-linear storytelling can both be applied for user experience and engagement, allowing for multiple endings and consequences that require the player's input. However, ergodic text is not always non-linear. *Modern Warfare 2* is a good example of an ergodic game that is linear: the game requires effort to complete (death = game over), but does not offer branching paths or multiple choices in its narrative. Therefore, games are ergodic in nature, but are not always non-linear. For this paper's purposes, non-linearity matters because the three chosen games (*Papers, Please*, *Fallout: New Vegas* and *Cyberpunk 2077*) feature player agency as a central component of their didactic function.

Player Agency and Authorship are important

Building on Bogost's emphasis on audience interaction, Aarseth examines how this interaction can succeed or fail through the concepts of intimacy or failure. "Trying to know a cybertext is an

investment of personal improvisation that can result in either intimacy or failure. The tensions at work in a cybertext, while not incompatible with those of narrative desire, are also something more: a struggle not merely for interpretative insight but also for narrative control" (Aarseth 10). The intimacy creates a unique connection that impacts engagement with the text and outlines the risk of participating in a cybertext that can either deepen immersion or fail, leaving the audience disinterested in the text. The intimacy that Aarseth describes is closely related to procedural rhetoric and its enthymematic nature. Players will only fill in the enthymematic gaps if they achieve engagement with the medium. Without this intimacy, procedural rhetoric cannot function because the arguments exist within the procedure, which requires player interaction to be realized, which raises the question of co-authorship of the text: to what extent do players create the text through their interaction?

Theorists like George Landow argue that the concept of hypertext (non-linear texts) allows the reader to become a co-producer of the text. Aarseth's concept of cybertext argues differently, that players configure and actualize the text, but do not author it. They work within the possibility space created by the game's designer:

The activity of hypertext reading is often portrayed, in contrast to codex reading, as a kind of co-authorship, with the reader creating her own text as she goes along. This idea has done much to promote the myth of hypertext as a better "tool for the mind" than the older writing technologies. I doubt, however, that the effect of hypertext (in its many different implementations) can be singularly identified as a means to make reading and writing come together in a single process. The cognitive aspects of hypertext cannot be elaborated here, but in terms of literary theory, it is fair to say that the hypertexts we can observe today […] operate well within the standard paradigm of authors, readers, and texts (Aarseth 77-78).

Aarseth, therefore, maintains a clear distinction between authorial design and player configuration. While the player is not a co-author, it is the player's effort and choice to interact with the cybertext that creates the meaningful and unique engagement. This "struggle of authorship" (Aarseth 76-77) manifests as players navigate and shape their textual experience. In *Fallout: New Vegas*, the game already features a pre-designed narrative framework centered on player interaction. However, the specific story that unfolds from player choice can change the outcome of the story through their interaction with the cybertext. By engaging with and adapting the experiences to their interest and morality, the narrative becomes a unique experience tailored to each player individually. It is through this process that the player co-produces the experience, but does not co-produce the text, as they still work within the constraints and limits of it.

Ergodic Literature and Video Games

How does this work with video games? As mentioned, Aarseth argues that cybertext (which includes video games) cannot be analyzed through traditional methods. "If these texts redefine literature by expanding our notion of it, and I believe that they do, then they must also redefine what is literary, and therefore they cannot be measured by an old, unmodified aesthetic (Aarseth 22-23). Building on Marshall McLuhan's insight that different forms of media require different forms of analysis, Aarseth insists that the same is true for cybertext. But why is this important to video games?

First, games are inherently incomplete without player participation; without the player, the game remains unrealized. The concept of ergodic theory demonstrates this: that for the text to be experienced, it requires active participation. Secondly, the meaning of the text emerges through traversal of it, not merely interpretation. This makes games fundamentally different from passive

media, and therefore, understanding ergodic properties in video games is essential for analyzing how games communicate their messages. “As a theoretical perspective, cybertext shifts the focus from the traditional threesome of author/sender, text/message, and reader/receiver to the cybernetic intercourse between the various part(icipant)s in the textual machine” (Aarseth 22). This matters for the analysis because my chosen works, *Papers, Please*, *Cyberpunk 2077* and *Fallout: New Vegas* all operate within the ergodic framework. They require active participation for their argument about social systems and argumentative complexity, and feature non-linear narratives that demand player engagement to be experienced.

Together, McLuhan, Bogost and Aarseth provide the theoretical foundation for understanding video games as a didactic medium. McLuhan establishes that the medium shapes meaning; Bogost demonstrates how procedural rhetoric creates argumentation through interactive systems and Aarseth explains how ergodic engagement requires active participation to realize textual meaning. These frameworks explain how video games communicate, but to specifically analyze what SF video games communicate, we must also understand how SF creates its unique form of social critique. Therefore, the paper now turns to science fiction theory.

Science Fiction Theory

Darko Suvin's Theory

We have outlined the importance of video games as a medium, their unique interactive properties and their didactic engagement with players. But to understand the argumentative and didactic potential of SF videogames, we must examine SF's unique qualities, as a genre capable of critiquing societal systems. Darko Suvin, in his book *Metamorphoses of Science Fiction,* provides the foundational framework for understanding this critical function, introducing two key concepts: cognitive estrangement and the novum (Suvin 4).

Cognitive Estrangement

To begin, the paper will examine cognitive estrangement. The concept describes how SF worlds make the familiar strange, while still being recognizable (Suvin 7-8). For example, a classic trope in SF is the wasteland, showcased in George Miller's *Mad Max: Fury Road* or John Hillcoat's *The Road*. These wastelands estrange the familiar landscape of our reality with an alternate and alien one that resembles reality closely enough to make it recognizable. In *Fallout: New Vegas*, the same wasteland is presented, strange and unfamiliar, yet recognizable due to the aesthetic design of 1950s atomic era America, which bridges the gap between fiction and reality. The wasteland in its extremity creates clear and concise consequences of nuclear proliferation, enabling critical analysis of the logical outcomes of nuclear innovation and war (6). This is what makes the estrangement cognitive: prompting audiences to critically examine real-world nuclear threats through speculative fiction.

This critical distance is crucial for the genre's ability to critique, as it creates a discourse about our own reality, which SF can illuminate through the process of defamiliarization. Originally coined by Viktor Shklovsky, defamiliarization restructures perception by making the ordinary seem extraordinary, disrupting complacency and helping the audience recognize what is normally taken for granted (Shklovsky 7). SF achieves this through speculative premises such as apocalyptic scenarios, alien societies or technological innovation, allowing the genre to explore societal problems from the safe distance of speculation, rather than direct representation.

SF's critical examination emerges during periods of rapid historical change, moments when societies experience fundamental upheaval. Therefore, the genre functions not merely as a reflection of society but also as a tool for interrogating and critiquing it during times of change.

> SF, which focuses on the variable and future-bearing elements from the empirical environment, is found predominantly in the great whirlpool periods of history, such as the sixteenth-seventeenth and nineteenth-twentieth centuries. Where the myth claims to explain once and for all the essence of phenomena, SF first posits them as problems and then explores where they lead (Suvin 7).

Suvin argues that SF is not an escapist fantasy, but a genre that actively engages with contemporary anxieties and uncertainties, by positing social phenomena as problems to explore rather than fixed truths. This approach is fundamentally cognitive: where myths offer emotional certainty and closed answers, SF demands rational analysis and open-ended exploration. The worlds of SF create the distance necessary for critical examination and speculation about alternative futures. This function can become particularly powerful when combined with the interactive properties of video games.

Novum

Cognitive estrangement operates through a mechanism which Suvin terms the novum. The novum means a "new thing," a scientifically plausible innovation (Suvin 64), and is responsible for creating the estranging effect within SF worlds. The novum must be plausible within the SF text to enable a cognitive connection with our reality (65). For Suvin, this plausibility is crucial in creating the bridging effect, allowing social critique to occur without remaining outlandish or disconnected from reality.

For example, artificial intelligence serves as a contemporary and frequently employed novum. It is a well-known trope in SF, often arising from granting the AI full sentience, which makes them malicious in SF stories. This trope appears in Stanley Kubrick's 2001: *A Space Odyssey*, where HAL 9000 serves as the antagonist, or in the Portal games, where GLaDOS and Wheatley are both antagonists to the player. These examples of malicious AI exemplify a broader SF convention: depicting AI as dangerous to reflect a common societal fear about technology and exemplify a tradition that dates back to Mary Shelley's *Frankenstein*, which is often regarded as one of the earliest SF stories that established the trope of unchecked scientific ambition. By grounding her cautionary tale in scientific experimentation, rather than magic or supernatural forces, Shelley created a plausible novum that allows readers to examine their own society's relationship with science critically. These examples, whether contemporary or historical, illustrate how novums create estrangement that links SF to social reality.

Suvin believes that SF serves an important role within the literary genre and argues that, unlike fantasy and fairy tales, which contain fantastical elements (Suvin 8), SF is rooted in plausibility, rather than magic, which enables rational analysis connecting speculative elements to reality.

One of fantasy's main detriments in Suvin's eyes is that it presents a rigid utopia. The concept of "happily ever after" is the ending that fantasy often proposes, creating a static and definable ending. However, Suvin suggests that a utopia should not be static, but rather change and adjust with society (62). SF achieves these functions by adapting to historical change, providing openness rather than closure. Within this openness, SF can continuously critique societal systems and challenge societal perceptions of the future. In this constant flux of change, for a better future is where Suvin believes an idealized utopia lies, one that always looks towards a brighter future. However, Suvin strictly believes that only plausible, scientific fiction can critique society, which has been contested by other scholars, as the next section will explore.

Suvin's original argument is that SF critiques societal functions; this paper extends that argument, proposing that SF also serves a didactic function, teaching audiences about their present reality through estrangement. This argument becomes central to the paper's investigation of how SF video games create learning experiences about societal systems. The novum's estrangement pairs effectively with Bogost's concept of the interpretive player. The cognitive estranging effect creates critical distance that the player must interpret through video games' enthymematic nature. Together they create a meaningful bridge between gaming systems and reality that allows reflections, commentary and critique of real-world systems and structures. This interpretative and cognitive bridge deepens the didactic potential of SF video games, as players engage with social critique through interactive experience.

However, Suvin's focus on hard SF within literary texts limits direct theory application to our chosen works, *Fallout: New Vegas*, *Papers, Please* and *Cyberpunk 2077*, which fall within the soft SF category, focusing on social and political speculation rather than technological

extrapolation. Suvin's theory states that SF must be rationally plausible (Suvin 65). While soft SF maintains rational plausibility, its focus on societal systems rather than hard science means Suvin's framework requires adaptation. To apply Suvin's insight to soft SF, this paper expands his framework to encompass soft SF's focus on social and political systems.

Hard and soft Science Fiction

Before adapting Suvin's theory to soft SF, it is important to understand the concept and distinction between soft and hard SF. Both exist within the broader SF genre, but they differ in their narrative focus and worldbuilding priorities. Hard SF focuses on scientific and technological extrapolation, grounding its narrative in the exploration of scientific principles (Johnston). A popular contemporary example of hard SF is Ridley Scott's version of *The Martian*, based on Andy Weir's novel, where the main protagonist, Mark Watney, is stranded on Mars. Watney's survival is based on plausible scientific principles, utilizing mathematics, biology and chemistry to overcome the numerous challenges of the barren planet. This approach explores the scientific challenges and dangers of space travel and interplanetary survival, and therefore, the story is inherently hard SF.

Hard SF narratives often examine how scientific innovations might reshape society, whether towards utopian progress or a dystopian collapse. *The Martian* is a celebration of humanity's perseverance and scientific innovations, as Watney's resourcefulness ensures his survival and showcases humanity's achievements in space travel. However, the subgenre also serves as a warning, as seen in *The Road*, *Interstellar* and *Snowpiercer,* where themes of human greed and destruction depict a dystopian future marked by environmental and societal collapse.

Soft SF, in contrast, focuses on the social sciences, exploring how plausible scientific innovations impact culture, often delving into complex philosophical questions through intricate political structures, detailed economic systems or rich mythologies (Johnston). Ursula K. Le Guin's *The Left Hand of Darkness* features elements of hard SF, such as faster-than-light travel and androgynous aliens, establishing a future where interstellar civilization exists. However, the narrative never lingers on the technological mechanisms featured in the story; instead, it uses an alien society without a fixed gender to explore gender fluidity and identity, focusing on how plausible scientific innovations reshape social structures and human relationships. This allows soft SF to examine abstract social concepts through speculative scenarios that highlight contemporary issues within society.

However, soft and hard SF should not be seen as two extremes; instead, the subgenres should be understood as a spectrum, wherein many different stories of SF can be placed (Myers). *Fallout: New Vegas* leans towards the soft SF genre, focusing on ideology, moral ambiguity and societal collapse in the wasteland. But it also features elements of hard SF in its story: the atom bomb and nuclear fallout function as hard SF novums. Although the video game features novums of hard SF, the scientific extrapolations are closer to a pseudo-science, and are meant to enrich the soft SF world of *Fallout: New Vegas*, rather than to present a plausible reality. The game does not fall within the hard SF category, but does contain some form of hard SF in its world, illustrating that hard and soft SF exist on a spectrum rather than as different categories.

Robert Scholes: Fabulation

Robert Scholes' theory of fabulation provides a crucial bridge between Suvin's framework and soft SF by validating imaginative fiction's capacity to represent reality, thereby indirectly

refuting Suvin's argument that fantasy lacks the ability to reflect reality. In his book *Fabulations and Metafiction*, Scholes coins the term fabulation to describe fiction that openly acknowledges its artificiality and uses it purposefully to explore reality (Scholes 8). By accepting this artificial stance, fabulation challenges earlier criticism that fiction cannot simulate reality due to its artificial nature (7). Scholes demonstrates this challenge through the metaphor of the mirror and map, but acknowledges these concepts require redefinition: "Mapping is based on a sign system that is highly arbitrary in its symbols, but aspires toward an exact iconicity in its proportions. Mirrors…are superbly iconic in their reflections of reality, but patently artificial…" (12). By redefining the concepts through Jorge Luis Borges' work, Scholes creates a more nuanced understanding of fiction's capacity to reflect reality.

> "But Borges's mirror is more modest, and does only what ordinary mirrors do. We see in it not nature or the world, but only ourselves "it is a mirror that reflects the reader's own features." Of the world merely a map, but it is a map that points accurately to things that are there in reality…And this is a major point. Reality is too subtle for realism to catch it…but by invention, by fabulation, we may open a way toward reality that will come as close to it as human ingenuity may come" (Scholes 13).

This reimagining of fiction is crucial, as it allows the genre to reflect reality more accurately. The map's symbols (invented, fictional) might be arbitrary, but its underlying patterns show more than a fictional landscape; they also include structures, mechanisms, and systems that exist within reality. Where the map reveals these features, the mirror reflects ourselves, the writer and the reader, within the text. Therefore, Scholes argues, fantasy reflects more than an artificial reality, described as a "reality behind reality" (Scholes 16), where the stories of fiction have underlying emotional truths, social patterns and psychological structures, but are not visible in a

straightforward, realistic depiction. This gives fiction a unique ability to capture the complexity of the world and its people, which realistic fiction cannot adequately represent (16). Thus, fabulation functions as critical analysis, able to comment on, document and scrutinize contemporary society as effectively as non-fiction.

Structural Fabulation

Scholes expands this argument in his book *Structural Fabulation: An Essay on Fiction of the Future*. He examines fantasy's ability to reflect reality through modeling structural elements, government systems, ideologies and bureaucratic mechanisms:

> Yet structural fabulation is neither scientific in its methods nor a substitute for actual science. It is a fictional exploration of human situations made perceptible by the implications of recent science. Its favorite themes involve the impact of developments or revelations derived from the human or the physical sciences upon the people who must live with those revelations or developments (Scholes 41-42).

This approach enables analysis of games like *Fallout: New Vegas*, which features faction-based governments and bureaucratic mechanisms. However, to apply this to video games specifically, we must also establish how Scholes's fabulation connects to Suvin's concept of novum and estrangement, and whether these concepts extend beyond hard SF to encompass soft SF and interactive media.

Both Scholes and Suvin recognize that speculative fiction creates a discontinuous world that confronts readers with cognitive insights about reality. "Fabulation, then, is fiction that offers us a world clearly and radically discontinuous from the one we know, yet returns to confront that known world in some cognitive way" (Scholes 29). Both theorists recognize SF's function,

creating cognitive estrangement, yet diverge on its mechanism: Suvin emphasizes scientific plausibility (hard SF), while Scholes emphasizes structural modeling (applicable to fabulation broadly, which also includes soft SF).

Adam Roberts

To fully bridge Suvin's concepts to soft SF, we turn to the scholar Adam Roberts. Roberts offers a modern approach to SF and a critical synthesis between Suvin and Scholes. In his book *Science Fiction: The New Critical Idiom*, Roberts examines various iterations of SF and many different authors, but what is important for this paper is his acknowledgment of both Suvin and Scholes' theories and approaches to SF. He agrees with Scholes that fiction and fantasy (and therefore soft SF) have the same capabilities to reflect reality, but is also intrigued by Suvin's concept of the novum and cognitive estrangement (Roberts 9-10). Roberts provides the crucial synthesis, arguing that, "...implicit within these three definitions is a sense of SF as a symbolist genre, one where the novum acts as a symbolic manifestation of something that connects it specifically with the world we live in" (Roberts 16). Rather than separating Scholes's fabulation from Suvin's scientific framework into opposing camps, Roberts demonstrates how both approaches employ the novum, whether it is technological or social, to create cognitive engagement with reality. This synthesis creates a more adaptive and versatile approach to SF that allows it to work across a spectrum of stories that function within both hard and soft SF.

Roberts's Insight

Having synthesized Suvin and Scholes' theories, Roberts makes his own contribution, as he examines SF's capacity to critique power structures, social organization and technological impact through a speculative framework. Drawing from Suvin, Roberts adapts cognitive

estrangement as a method for critically examining the present. SF reframes reality, representing societal problems within speculative worlds that prompt the audience to confront their own social conditions. As he argues, SF's power lies in exploring alterity:

> …the fact that SF provides a means, in a popular and accessible fictional form, for exploring alterity. Specific SF nova are more than just gimmicks, and much more than cliches: they provide a symbolic grammar for articulating the perspectives of normally marginalised discourses of race, of gender, of non-conformism and alternative ideologies. We might think of this as the progressive or radical potential of science fiction (Roberts 28).

Drawing on Suvin's terminology, Roberts positions the novum, whether technological (hard SF) or social/structural (soft SF), as a defamiliarizing tool applicable across the spectrum of hard and soft SF, integrating both theorists' perspectives in a synthesis. This establishes that cognitive engagement, not technological plausibility, determines SF's critical capacity

SF's Didactic Capacity

Roberts's emphasis on SF's capacity to explore power structures and articulate perspectives of race, gender and alternative ideologies reveals an implicit pedagogical function. While Roberts does not explicitly use the term "didactic," his argument that SF provides "a means for exploring alterity" describes a learning process. This learning process enables SF to frame and teach historical contexts, contemporary societal problems and real-world power structures. This capacity serves as the paper's central argument: that SF's didactic capacity, combined with video games' interactive mechanics, creates a uniquely powerful pedagogical medium. This unique framework is what the paper will explore in the following chapter through close analysis of the video games: *Papers, Please*, *Fallout: New Vegas* and *Cyberpunk 2077*.

Synthesis

Finally, to end the theory section, a synthesis will be created to understand how each of the theories works together and how they will be applied in the analysis. However, the full application of the synthesis will be explained in the method section. To begin, the paper will briefly summarize and explain the synthesis between each of the video game theorists.

Marshall McLuhan serves as the foundation, establishing that the medium itself fundamentally shapes how literature is approached and how arguments are constructed, which is central to Bogost's theory on procedural rhetoric: that video games persuade and make arguments through active interaction. Aarseth outlines this in detail through ergodic literature, which helps define how video games achieve this active participation. Together, these theorists explain why video games are a unique medium that shapes the audience's experiences with literature. These experiences have a didactic function, teaching players through interaction and engagement, by utilizing code (gameplay) to structure or make arguments.

The second part of the paper's theory introduces the genre of SF as a unique contribution to procedural rhetoric and ergodic literature. SF as a genre can illustrate and critique societal problems through its stories told and worlds created. This is outlined in detail by Darko Suvin and his theory on the novum and cognitive estrangement, and then adapted to contemporary SF, utilizing Robert Scholes and Adam Roberts. While these theories deal with passive literature (written text), this paper adapts them to the interactive medium of video games to examine how each theory contributes to the didactic framework, with a focus on societal critique, enhanced by interactivity and cognitive estrangement.

Both the medium of video games and the genre of SF work together to create a didactic framework that actively imparts experience through active engagement and the specific genre. The defamiliarizing effect is felt through the ergodic literature, as the player works through the SF world and narrative, creating an active experience with the text. Procedural rhetoric grounds the abstract concept of SF and ergodic engagement highlights how in-game systems intentionally represent different themes or concepts. In the case of SF video games, these could be societal problems or concepts that exist within reality. The wasteland in *Fallout: New Vegas* is not merely presented as an abstract metaphor or concept of humanity's greed and violence, but is actively felt and experienced by bringing the stories to life: scarcity of resources, irradiated areas and mutated monsters threaten the player with failure (game over). These are moments of active engagement that place the audience directly into the scenarios, leaving a lasting impression. The ergodic literature brings these themes to life and procedural rhetoric makes them argumentative.

Central to the synthesis is the role of the novum in the procedural system. The novum is the centerpiece, creating the estranging effect and tying directly into procedural rhetoric. The argumentation is created around the novum; to continue the Fallout example, it is the novum of the nuclear wasteland that creates the estrangement and therefore determines the procedural rhetoric. A game developer creates gameplay features to deliver the experiences of the novum; the coding is tailored to the experience of an irradiated wasteland for the player, which enables procedural rhetoric. However, to analyze the wasteland and the other SF tropes in the paper’s chosen games, we have to apply a more methodical approach, applying the right tools to analyze the game. Having established the theoretical framework, the method will explain how the framework will be applied as an analytical tool for didactic engagement.

Method

With the framework established, this section explains how it will be applied to the three chosen games: *Papers, Please*, *Fallout: New Vegas* and *Cyberpunk 2077*. However, before I explain the application, I will establish the concepts of macro and micro novums. While Suvin discusses novums as singular innovations, SF texts often contain multiple novums operating at different scales. For analytical clarity, I distinguish between macro novums (overarching SF premises, such as post-apocalypse and AI sentience) and micro novums (specific technologies and social structures that support the macro premise). This distinction is necessary because players do not interact with macro novums directly; they experience them through micro novums. The didactic function emerges from this relationship: the macro novum provides the estranged context, while micro novums provide the interactive mechanics through which players construct meaning. This framework allows systematic analysis of how each game layers novums to create its didactic experience.

Fallout: New Vegas will use the same approach to analyze smaller parts of the gameplay (side quests, characters, the faction system). However, where *Papers, Please* grounds its critique in near-realistic authoritarianism, Fallout's post-apocalyptic wasteland operates through more extreme SF elements, creating a different mode of cognitive estrangement. Additionally, Fallout provides the player with a greater amount of agency, which becomes an additional variable to examine when employing the didactic framework. Finally, *Cyberpunk 2077* will be examined as a failure case on how the didactic framework becomes too diluted through the concept of ludonarrative dissonance.

I will employ my own experiences, pictures and in-game sources (dialogue and general lore from each video game) that I have either gathered myself or from other sources, such as the Wikipedia page for each game. Wikipedia will serve only as a reference for in-game content (dialogue, lore, mechanics), and not as an analytical source. Additionally, I will use secondary sources outside of Wikipedia, as other academic papers have written about my chosen video games, and I will incorporate their findings if they become relevant to the analysis.

MDA Framework

To help guide the analysis and demonstrate the didactic function of video games, several methodological tools will be used to establish consistent terminology and interpretive focus. The first of these tools is the MDA framework, created by Robin Hunicke et al,. which provides a structured approach to understanding video game systems and player experience.

MDA stands for mechanics, dynamics and aesthetics, and distinguishes three different layers of game design. Mechanics refers to the rules and systems that create "gameplay". Dynamics emerge from players' interaction with the gameplay, also described as the emergent behavior that arises from gameplay (Hunicke et al. 2). Take the board game Monopoly; it has the mechanics of moving around the board through dice rolls, and the ability to purchase properties that are not currently occupied or purchased by other players. Combined, these two mechanics create the emergent behavior of territorial acquisition. Aesthetics describes the emotional responses from players that arise from interaction (Hunicke et al. 2), and breaks aesthetics into a taxonomy:

1. **Sensation**
   Game as sense-pleasure
2. **Fantasy**
   Game as make-believe
3. **Narrative**
   Game as drama
4. **Challenge**
   Game as obstacle course
5. **Fellowship**
   Game as social framework
6. **Discovery**
   Game as uncharted territory
7. **Expression**
   Game as self-discovery
8. **Submission**
   Game as pastime

Each of these categories describes the emotional response the game aims to elicit from the player. The aesthetics tie back to the dynamics and mechanics, to better understand how to achieve certain emotional reactions. A horror game aims to instill a sense of dread in the player, combining challenge (player stress) with narrative (story-driven fear) to create sustained dread. However, an open-world game could aim for other factors, such as fantasy and discovery, to create immersive exploration experiences.

MDA provides the vocabulary necessary for analyzing how video games create player experiences and supports the paper's examination of video games' didactic function. The framework illustrates in detail how Aarseth's ergodic literature is executed through interactive text: Mechanics create gameplay, gameplay creates dynamics through interaction, and is then interpreted by the player, creating interactive text. Furthermore, it supports Bogost's concept of enthymematic engagement, as aesthetic experiences hinge on the player's interpretation of the dynamics (Hunicke et al. 4), focusing on how mechanics create arguments through enacted player experience.

However, MDA is a framework designed for video games and not literary genres. Therefore, it cannot analyze SF-specific elements such as the novum or estrangement, but MDA's aesthetic

layer provides a means by which estrangement can manifest. Estrangement is not merely an aesthetic response. Suvin's cognitive estrangement involves both emotional experience and critical reflection. Players feel the unfamiliarity of the novum while simultaneously recognizing its connection to real-world structures. The aesthetic layer delivers the experiential component and the SF elements provide the cognitive component. Together, they enable the critical examination central to SF's didactic function. For example, the fictional state of Arstotzka in *Papers, Please* is an estranged version of the Soviet Union, realized through restrictive mechanics that generate oppressive dynamics, creating the aesthetics of living in an authoritarian regime. The aesthetic experience carries the estranging effect, allowing the player to critically examine authoritarian structures through enacted experiences.

Ludonarrative Dissonance

Finally, one additional tool will be applied to the *Cyberpunk 2077* analysis: ludonarrative dissonance. The term was originally coined by game designer Clint Hocking when critiquing the video game *Bioshock* and refers to a disconnect between the narrative and gameplay in video games. Hocking introduced the term in a blog post from 2007, but I was unable to access the original post; therefore, I refer to an article by Logan Taylor, which explains the term in detail.

Ludonarrative dissonance describes the relationship between narrative and gameplay in video games, and how they either support or contradict each other. Hocking describes this further as a dissonance between the ludic part of a video game (the gameplay and mechanics) and the narrative (the story and characters) (Taylor). For example, in *Cyberpunk 2077*, the narrative presents urgency as the protagonist is dying and must find a cure for their condition, but is contradicted by the non-linear gameplay that removes or deflates the urgency of the narrative.

This dissonance creates confusion for the player, leading to immersion-breaking moments that can ruin the overall experience of the video game.

Ludonarrative dissonance, alongside MDA and the synthesis framework, will demonstrate how procedural rhetoric can fail when narrative and gameplay contradict each other. The Cyberpunk chapter will use this framework to compare *Cyberpunk 2077's* dissonance with the ludonarrative harmony in *Papers, Please* and *Fallout: New Vegas*, illustrating how narrative-gameplay alignment either supports or undermines procedural rhetoric. With these analytical tools established (theory synthesis, macro/micro novums, MDA and ludonarrative dissonance), the analysis can now examine how SF video games create didactic experiences through procedural systems. The analysis begins with *Papers, Please*, followed by *Fallout: New Vegas* and concludes with *Cyberpunk 2077*.

Analysis

Papers, Please Analysis

Papers, Please is a linear game with a straightforward story and premise. The player works as a border inspector in the fictional state of Arstotzka, charged with maintaining the East Gressing crossing, rejecting all foreigners or immigrants, and only allowing citizens of Arstotzka to enter the country (fig. 1). The state is loosely modelled after the Soviet Union and its communist ideology, which from its association alone adds a layer of social commentary on authoritarian regimes. Although never explicitly stated, visual and narrative elements (propaganda posters, bureaucratic procedures and surveillance apparatus) evoke Cold War-era authoritarianism, establishing the game's macro novum that will be explored later.

Central to the gameplay is checking and verifying documentation, and rejecting any individual with discrepancies in their documentation. As the game progresses, difficulty increases through escalating immigration laws, where initially restrictive rules gradually expand to allow foreigners to immigrate with proper documentation. However, terrorist threats within the state and at the border of Arstotzka lead to increasingly complex security protocols that the player must enforce.

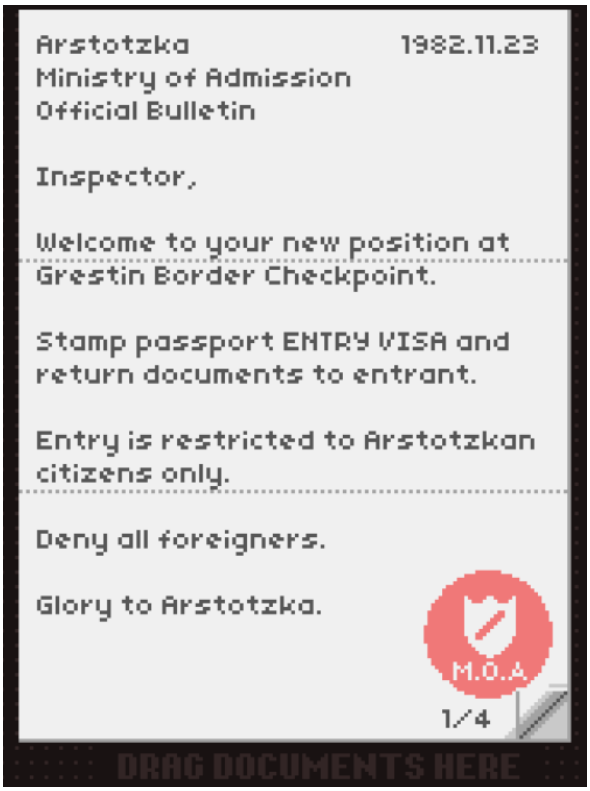

Fig. 1. Showcasing the game's core objective.

The gameplay revolves around three central mechanics: resource management, time limit and failure/punishment states. Resource management refers to the player's currency (referred to as credits) and is rewarded whenever the player successfully processes a person, whether by rejecting or allowing them into Arstotzka. Each day is measured by a set time limit, and the day ends when time runs out, limiting the number of resources the player can collect. However, should the player fail, either by rejecting people with faultless documentation or accepting people with discrepancies in their documentation, it results in a penalty that forces the player to examine each piece of documentation more carefully.

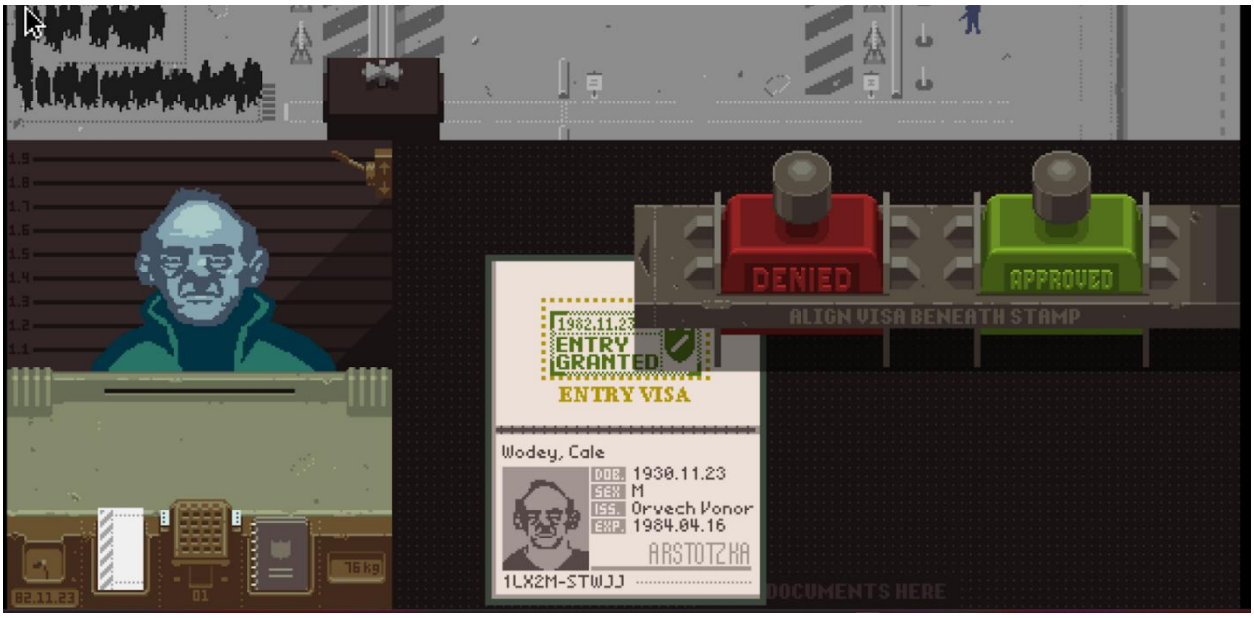

Fig. 2. Showcasing the general game HUD (Head-Up Display).

These mechanics describe restrictive gameplay that bottlenecks the player's resources through time constraints and punishment. In particular, the different paperwork (passports, work permits, diplomatic visas) contains a lot of information (expiration date, gender, issuing state, name and passport ID), all of which can have discrepancies. The player must actively inspect each document to validate the information, and even the smallest error can result in a citation (punishment) being issued to the player.

This creates the dynamics of stressful work that the player experiences through gameplay, quickly learning that working efficiently is critical to maximizing resources. Another important mechanic further complicates this: the player's family. The player is tasked with supporting a wife, son, mother-in-law and uncle (fig. 3). At the end of the day, the earnings from the shift must cover rent, heat and food, with each family member's survival dependent on securing these resources. Neglecting any expenses leads to sickness or hunger, which eventually leads to one or

more family members' death, which creates an additional failure state ending in a game over. This additional mechanic further intensifies the pressure to process immigrants quickly, adding another layer to the dynamic of a stressful work-life.

Fig. 3. Showcasing the End of Day Screen and Family Management Screen.

The game-over state is intrinsic to video game design. It is crucial for player motivation, as it creates an unspoken agreement with the player: effort and skill will be rewarded with progression, narrative satisfaction and completion, and the game-over state threatens to deny players these rewards. When the player fails to execute game mechanics correctly, this forces a game over, ending the game prematurely without the conclusion or the satisfaction of beating the video game (fig. 4).

Fig. 4. Showcasing Family Death Ending.

Papers, Please utilizes the family system, citation-based imprisonment (too many citations result in arrest) and other failure conditions to signal this game-over state and threaten the player with a multitude of failure states, with the family system serving as constant economic pressure. This failure state operates on two levels, adding narrative weight when a family member dies, and threatening the player with mechanical failure, making compliance with systematic rules feel like a necessity for family survival and successfully beating the game. This dual motivation, narrative empathy and the drive to succeed mechanically, strengthen the procedural argument as the player feels the weight of economic necessity on an emotional and mechanical level.

Together, these dynamics produce the aesthetic layer (the experiential response in MDA's taxonomy). This experiential response is the felt reality of working as a border control agent under strict rules and jurisdiction, creating the aesthetic of challenge (games as obstacle), where

the player's performance is judged for each person they process and the price of failure is steep (family death). The pressure not only creates an ergodic experience for the player but also speaks to a broader argument: the reality of working in an authoritarian, surveillance state that erodes morality in favor of survival. Individuals become another numerical process that must be executed correctly and efficiently, to avoid punishment and to secure their own survival.

The Dissolution of Morality

The dissolution of morality becomes more apparent as the days progress and the player interacts with different individuals attempting to immigrate to Arstotzka. These individuals are chatty, tardy or otherwise coded by the game to waste the players' time. For example, early on in my playthrough, I met Jorji Costava. A man who simply walks into the booth and stands there until the player directly asks him to present his passport. Jorji has no idea about proper procedures and spends a fair amount of time attempting to make small talk before he leaves, wasting my time and losing a potential process (fig. 5). Although he was friendly and harmless, I was less focused on the conversation and panicked about the time I lost attempting to remove him from the booth.

Fig. 5. Showcasing the first encounter with Jorji Costava.

This is one of the moments that encapsulate the erosion of morality within the player. I viewed Jorji not as a confused person who needed help with his documentation, but as an obstacle that reduced my overall efficiency and cut into my time and resources. The procedural argument is created as the player enacts cruelty to survive, executed through ergodic engagement. The argument only exists when the player actively navigates the gameplay mechanics, inspecting documents, navigating the citation systems and deciding the fates of the individuals in the booth. Without player effort, the procedural argument remains unrealized. It is through active effort that the player experiences the consequences, and it is where the procedural rhetoric is shaped. In my playthrough, I removed the human aspect from each person, making them a number to be processed, and this is the same conclusion that Miguel Sicart, in his paper, *Papers, Please: Ethics*, that also examines how the game makes arguments on morality.

However, although our gameplay choices may not have immediate or direct consequences on our nongaming lives (although this point is debatable), video games nevertheless inform our morality while we are playing and potentially affect our moral fiber once we're done. *Papers, Please* offers a great example of how video games can have those ethical effects (Sicart 2).

These ethical effects that Sicart mentions (moral implications and moral disillusionment) are where the didactic experience occurs and shapes the player. Through the restrictive mechanics, the player is forced into a dynamic loop of constant emotional feedback, actively engaged with a gameplay loop that is either morally corrupt (rejecting desperate immigrants) or morally just (accepting immigrants, but being punished for it). Whether morally just or corrupt, the player deals with oppression, injustice and ethical complexity. The game integrates this lesson through the ergodic enactment, demonstrating how an authoritarian system corrupts individual morality through economic coercion, not by forcing people, but by making everyday survival dependent on enacting cruelty, reinforcing the oppression mandated by the system.

Through limited resources, time constraints and the family system, the game establishes survival and progression as the core focus points for beating the game and achieving a desirable ending. These mechanics also erode the player's morality on both a gameplay and narrative level, as individuals become numbers that simply need to be processed. The restrictive gameplay creates the argument that authoritarian systems not only corrupt through their ideology, but also through economic coercion, making cruelty a necessity for survival. This foundation of core gameplay mechanisms creates the condition for examining how authoritarian regimes transform moral erosion into routine, thoughtless compliance.

The Banality of Evil

Economic pressure leads to moral corruption, as the gameplay revolves around perpetrating acts of cruelty. However, it is important to note that the player has the option to defy the rules: approving refugees with minor document issues, reuniting separated families or refusing to detain innocent people. But these choices result in citations that reduce pay and will compound over time, reducing income to the point where the player can no longer support their family. Compliance, therefore, becomes survival and cruelty becomes routine, not through malice, but because the game punishes the player for attempting alternative outcomes.

After the player has more firmly fallen into compliance, the gameplay loop presents another layer of mechanisms and analysis, in which forced cruelty evolves into routine cruelty. This is better described using Hannah Arendt's concept and phrase: “banality of evil”. The phrase was originally introduced in her book, *Eichmann in Jerusalem: A Report on the Banality of Evil* and helps explain how *Papers, Please* transforms forced cruelty into thoughtless routine. Arendt’s concept describes how ordinary people commit atrocities through thoughtless routine rather than malicious intent, based on thoughtlessness or blind obedience to a system where evil becomes normalized and bureaucratic rather than explicitly cruel (Arendt 65). Sicart applies the same concept in his analysis of *Papers, Please* and states that: “Totalitarian bureaucracies can be designed to alienate decision makers from the consequences of their choices and, in doing so, allow participants to feel ethically detached from their decisions” (Sicart 3). Arendt’s concept and Sicart’s insight help illustrate how an authoritarian system normalizes oppression through psychological mechanisms.

This normalized oppression becomes the didactic focus, as the game's mechanics bring Arendt's concept to life. This concept operates on two levels: first, the decisions made by the player are often open-ended, leaving them without closure on whether their choices were morally just or wrong. Secondly, as the game becomes progressively more difficult, the player becomes increasingly immersed in the mundanity of their task, further emphasizing how individuals are reduced to mere numbers to be processed. This mundanity is also referenced in Arendt's book. She explains that Eichmann justified his actions through "legalese", essentially hiding behind legal documents, and declaring he simply followed the correct procedures (Arendt 31). In the same vein, players hide behind the legality of their task, enacting cruelty, because it is procedurally "correct". Both the lack of closure and the mundanity of cruelty will be explored, as they further develop the didactic experience.

The first level details how *Papers, Please* turns the concept of evil into a mundane part of the gameplay/job. The game uses gameplay mechanics to illustrate how the player's agency is suppressed or forced into specific gameplay patterns. As Sicart explains, the game is designed to alienate the player's decision-making from consequences, through lack of information and closure (Sicart 3). The game denies information through unpredictable consequences. For example, on day 6 in my playthrough, a girl immigrating into Arstotzka left me a note, stating that a man named Davi Ludum is threatening her and pleads with me to help her (fig. 6). In response, I declined his passport, denying him entry, and received a citation for rejecting him. Although I attempted to save her, I saw the headline in the newspaper the next day, declaring that a newly immigrated girl was a victim of human trafficking (fig. 7). In this instant, I did receive closure, but it was not the outcome that I expected.

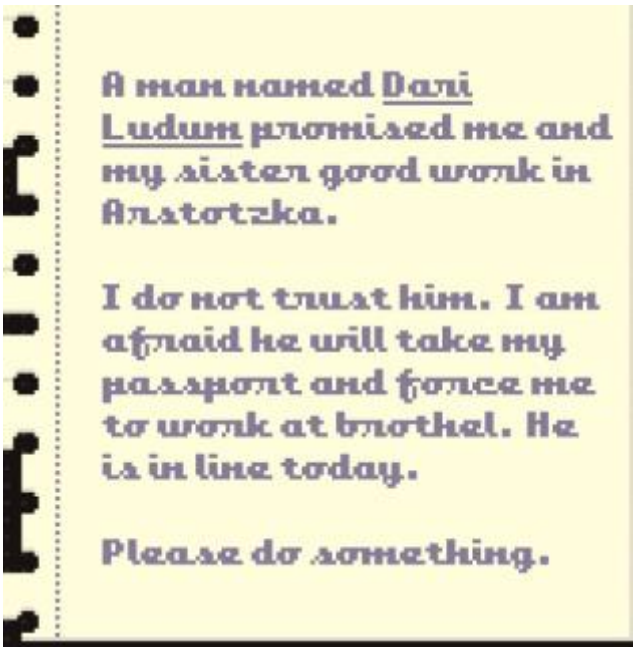

Fig. 6 and 7. Showcasing the women's letter and the newspaper report.

The unexpected outcome and lack of full agency create an aesthetic of moral futility, combining Challenge (punishing mechanics) and Narrative (the emotional weight of failure) from MDA's taxonomy. The mechanics (choice + citation system) generate dynamics where both options, helping or ignoring, lead to failure. Whether I sacrificed resources to intervene or followed procedure to protect my family, the outcome was harmful. The procedural argument is that authoritarian systems do not punish good choices, but make all choices feel futile. The escalating citation penalties (5, 10, 15 and 20 credits for each citation) allow brief moments of compassion, but the compounding losses eventually forced my compliance. Players can save one or two

individuals without too great a sacrifice, but the restrictive gameplay ensures that resistance becomes unsustainable for the player.

These restrictive mechanics create a gameplay loop: brief rebellion leads to economic punishment, which forces a return to procedural compliance. It is important to mention that these challenging and frustrating parts of the game either achieve Aarseth's concept of "intimacy" with the text or result in failure (Aarseth 4). A player who welcomes difficult games will embrace the challenge, while others who prefer a more relaxing, less restrictive experience might struggle to engage.

Another example was an encounter with an unnamed man who had correct documentation. Elated to be accepted into Arstotzka, he said: "Thank you so much! Please be kind to my wife, she is just after me" (fig. 8). However, his wife lacked proper documentation, and when questioned, she responded: "Please, I beg you. They would not give me a permit. I have no choice" (fig. 9). Having already received a citation (bottom right corner of fig. 9), I denied her entry. The legally correct choice that separated a married couple, kept the line moving, and protected my resources.

Fig. 8. Showcasing the encounter with the unnamed man.

Fig. 9. Showcasing the encounter with the unnamed man's wife.

These examples demonstrate a pattern in the gameplay that systematically denies clarity to the player. Whether through unexpected outcome (trafficking) or a complete lack of closure (separated couple), players never learn if their choices were right or wrong, creating moral ambiguity around their actions. This creates the aesthetic experience of moral futility. Although the player has agency, the majority of the consequences of their actions remain unknowable and therefore ultimately futile.

The examples demonstrate Sicart's point on alienated decision-making (Sicart 3). In both cases, I never learned the NPC's ultimate fate, and the game never mentioned them again. The demanding gameplay immediately pulled my attention to the next person, and I forgot about the encounter entirely. This ethical detachment emerges through ergodic engagement (disregarding individuals, for mechanical efficiency), allowing the player to experience complicity through interactive enactment. The mechanics of checking documentation, managing citations and processing efficiently reduces the player's morality to routine procedure. The game offers no ethical guidance and no closure. The player never learn if their choices were just, as morality dissolves into procedures and paperwork.

The game does not morally guide the player in either direction. Mechanically, following procedures is the safer choice, as it avoids citations and protects the player's income (resources). Yet the game never validates this compliance; there is no reward for cruelty beyond survival. Equally, mercy receives no narrative praise, only economic punishment. The game refuses to tell the player what is "right," leaving them suspended between mechanical incentives (procedures) and emotional instinct (mercy). This neutrality is deliberate, as the didactic lesson is not that

compliance is good or bad, but that the system forces players to weigh survival against morality with no correct answer.

The Mundanity of Compliance

This behavioral adaptation forces players to focus less on agency and more on optimal gameplay, which is further enforced by additional gameplay mechanics that actively reward cruelty. On day 11, one of the guards, named Calensk, approached my booth with a proposal. Every time I detain a person, Calensk receives a bonus to his paycheck and wants to strike a deal with me (fig. 10). His standard salary is insufficient, and he could use the additional credits. In exchange for detaining people (rather than rejecting them), he will share the bonus with me.

Fig. 10. Showcasing the first encounter with the guard, Calensk.

This proposal opens up additional gameplay mechanics that add another layer of moral complexity to the game. The side objective is not required to win the game, but the rewards for

completing the bonus objective (additional resources) lessen the pressure from the core mechanics (resources and time pressure), making it easier to progress through the days and win the game. The system rewards not only finding discrepancies but also detaining individuals, enforcing unnecessary cruelty to the immigrating refugees, for the sake of the player's survival. This additional reward system, paired with the punishment system, creates dynamics that condition the player to not only follow the rules but also enforce them. In MDA terms, this would be Challenge (survival) becomes intertwined with Submission (routine compliance).

The shift to routine compliance is reinforced as the game's difficulty increases by adding additional core tasks. Early in the game, it is only required to check the passport and an entry permit, then correlate the information between them, to make sure it is correct (fig. 11). Over time, more tasks are added ranging from work visas, diplomatic seal, checking issuing city is correct, fingerprints to confirm identity and checking for contraband etc. (fig. 12). All of these mechanics make processing an individual take longer, bloating the hud (heads up display) and slowing the player down, which mean processing fewer people (less resources) or making more mistakes (punishment removes resources).

Fig. 11 and 12. Comparison, showcasing the bloated HUD (Head-Up Display).

The cognitive load makes thoughtlessness a necessity for the demanding gameplay. Playing through the game, I reached a point where I went on autopilot. I simply forgot about the individual in the booth and only cared about the NPC's documentation, checking if it was faultless or not. It did not matter if they pleaded; I would ignore it, focusing entirely on the process. This autopilot behavior appears across player experiences. The YouTuber Markiplier demonstrates the same pattern (Markiplier 15:15 -16:00), entering a state of mechanically processing individuals with little regard for their pleas, even celebrating when finding errors because it allows faster rejection and progression to the next person (16:20).

This autopilot can also be described as 'flow,' originating from Mihaly Csikszentmihalyi's flow theory. The theory describes a state of optimal experience where individuals are fully immersed in an activity, experiencing energized focus, full involvement and enjoyment (Csikszentmihalyi). Flow occurs when players enter focused concentration on optimized processing in *Papers, Please*, which creates the fun engagement. This flow also hides the ethical undercurrent: doing the job well means more effectively enacting cruelty

The mechanical process is evident in both my gameplay and Markiplier's, demonstrating what Arendt describes: evil emerges not from an individual's malice, but from thoughtless participation in a cruel system. Arendt states that evil prevails when people not only turn a blind eye to cruelty, but also engage in the system that enforces it (Arendt 65). The villain within *Papers, Please* is not one single person. It is not the guard Calensk asking the player to detain people for monetary gain, nor is it the inspector threatening their livelihood. It is the general concept of a system that perpetuates evil throughout the populace.

The authoritarian system of Arstotzka functions as an SF novum, applying societal critique through procedural rhetoric and bringing Arendt's concept to life. The player's choices are not malicious, but necessary for survival. Thoughtlessness becomes a survival mechanism, turning oppression into a mundane routine. The player learns this lesson through ergodic engagement, navigating a convoluted documentation system that normalizes compliance.

However, it is important to note that the didactic experience remains subjective. Depending on the individual's own gameplay and perspective, different players may experience different lessons from *Papers, Please*. Some might focus on complicity, feeling enjoyment from enforcing the system and being rewarded for it. Others might fight against the system, focusing on resisting the system whenever possible, and others might focus on the overall systemic corruption. The game, even if linear in narrative, creates a procedural space for learning, but interpretation varies.

The Surveillance State as a novum

The surveillance state enhances the erosion of morality, and is a common novum found within SF stories. The novum draws on what Damien Broderick calls the "mega-text", a concept from

his book: *Reading By Starlight: Postmodern Science Fiction*. Mega-text is a shared vocabulary of SF tropes that audiences can immediately recognize as SF (Broderick 90 and 94). The surveillance state is included in the mega-text and appears across various SF works, from *The Handmaid's Tale's* network of civilian informants to George Orwell's concept of the telescreen, establishing a familiar pattern of the SF trope. In *Papers, Please*, this novum operates through gameplay mechanics. The player is monitored as the game tracks the player's progress. For example, on day 10, inspector Dimitri visited my booth to evaluate my performance, noting a total of 23 discrepancies and issuing a warning; improve "or else" (fig. 13). This is not an empty threat, as repeating violations will trigger a game-over state.

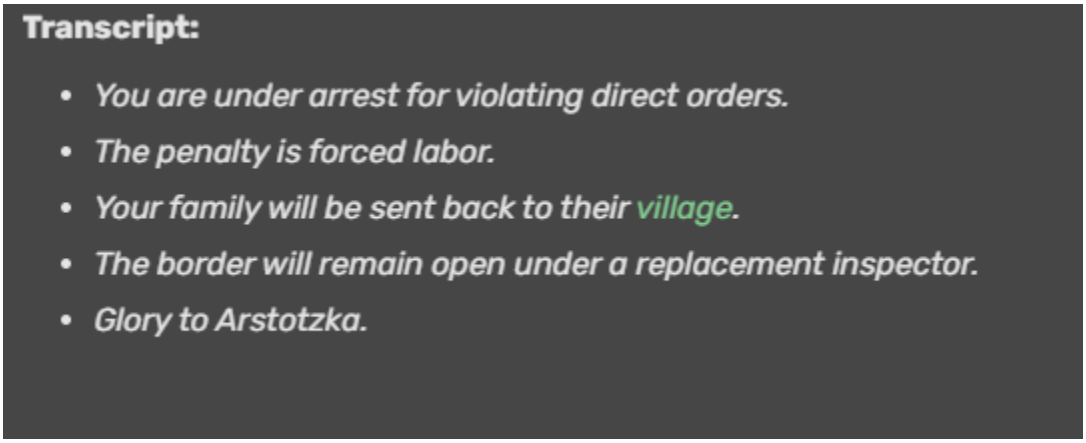

Fig. 13. Arrest Transcript from *Papers, Please*.

The tracking mechanism is akin to the fear of a corrupt state that tracks and controls our daily lives. Arstotzka, as the macro novum, represents this extreme example, and the ever-present surveillance apparatus (state and person) serves as the supporting micro novums that create the estranging effect. The novums (macro and micro) enhance moral complexity, as they apply an additional layer of gap-filling for procedural rhetoric, not only emulating a stressful job but also

providing historical context, allowing the player to fill in the gaps on what the state of Arstotzka represents.

This gap-filling is where procedural rhetoric and cognitive estrangement merge: players not only read about totalitarian surveillance, they experience its oppressive weight through gameplay, which allows them to recognize its parallels to real-world authoritarianism. The novums transform mechanical stress (the dynamic layer) into political intrigue (the aesthetic layer): the rush of processing documents becomes the felt experience of surveillance and oppression. This aesthetic response enhances the didactic experience, enabling critical scrutiny of state power through felt experience rather than abstract argument

The Mechanical Gameplay of the Surveillance State

The game actively reminds the player of surveillance through gameplay. Throughout the 31-day campaign, the game tracks player progress on multiple levels, some visible (citations), and others hidden. While the citation system provides immediate and transparent feedback, the game also tracks cumulative choices that determine endings without player awareness. This creates an asymmetric surveillance: players know they are being watched, but do not know what the game tracks, and what consequences will emerge during gameplay. The immediate effect is that the game adds a layer of unease onto the demanding gameplay, while also introducing a layer of social critique through the micro novum.

The asymmetric surveillance allows the novum to become a lived experience. This is a blend of mechanical gameplay and narrative feedback; the hidden tracking creates a pervasive sense of being watched (MDA aesthetics, third layer) that extends beyond visible citations. Players

internalize the experience of the surveillance state, not through exposition, but through the enacted experience of constant monitoring, creating the psychological weight of uncertainty. When the player becomes aware of the game's monitoring, each action is weighed more carefully, as any choice might be monitored. This is where the cognitive estrangement is brought to life, through the concept of workplace oversight and surveillance. The game takes on a more sinister tone, revealing how surveillance states operate on their citizens psychologically. The game's endings demonstrate the range of outcomes the surveillance novum enables.

There is a total of 20 endings (including game overs) based on cumulative player choices, many tracked invisibly throughout gameplay. While citation-based endings (incarceration or family death) result from failing the game's baseline mechanics, other endings emerge from hidden variables. For example, the best endings are usually considered to be ending 19 or 20, where the player picks a side in the war for Arstotzka and emerges victorious.

This conflict centers on Ezic, a resistance group introduced early in the game when a mysterious figure approaches the player and ominously states, "The Order Awaits" (fig. 14). This figure represents the resistance group Ezic. The group is dedicated to opposing the tyranny within Arstotzka and wants to replace the current government. Their success is based on the player's action, as they remain a critical strategic piece by granting Ezic agents passage into the country. Without additional information, the player must decide whether to remain loyal to Arstotzka or assist Ezic in their mission. The Ezic vs. Arstotzka storyline contains most of the ending, depending on the choices from the player that accumulate across the 31-day campaign, where seemingly minor decisions trigger unexpected consequences. Players navigate the narrative blind, aware they are being monitored but uncertain which actions matter most.

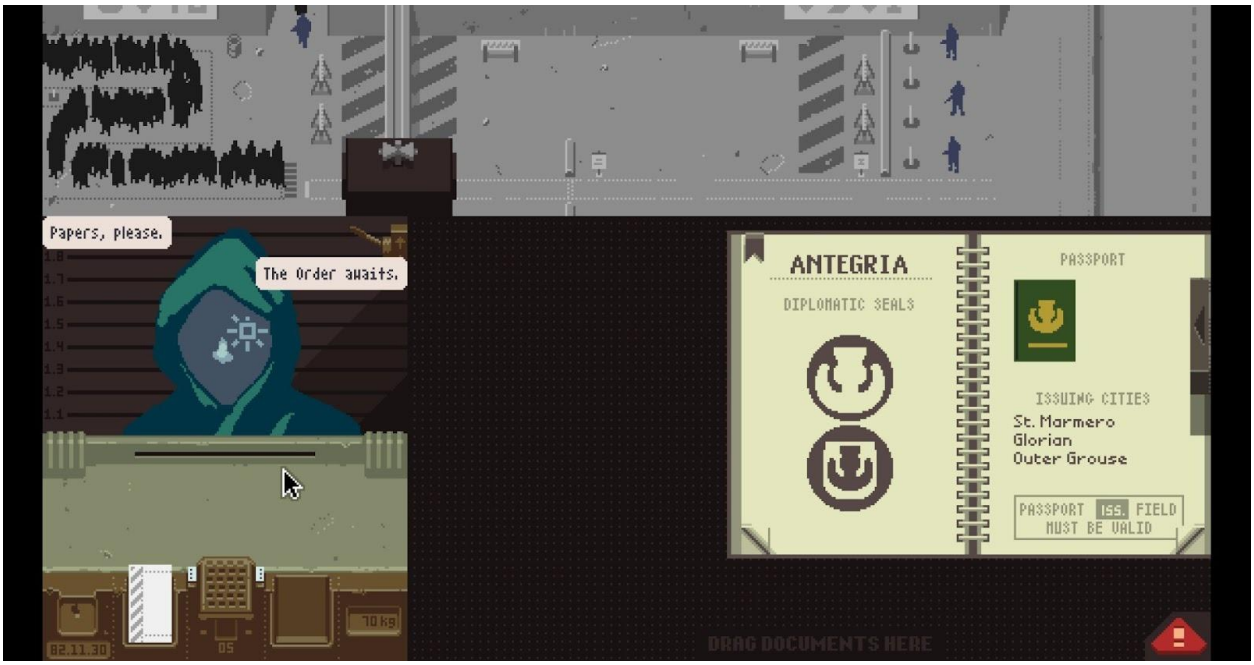

Fig. 14. Showcasing the first encounter with Ezic.

For example, Ezic agents will, throughout the 31 days, approach the player, asking them to complete various side objectives (allowing specific named individuals through the checkpoint, handing out false documentation to others). Each task completed is monitored by the game and progresses one of the two major endings. One of the early endings is achieved when an investigator approached the booth, asking questions about the resistance group. In my playthrough, I had assisted Ezic, and the inspector asked me if I had any knowledge of the group. I had the previous documentation from Ezic and handed it to the inspector, who promptly ended the game and gave me ending 3, and the achievement “Too Honest” (fig. 15, 16 and 17).

Fig. 15, 16 and 17. Showcasing Events Leading up to Ending 3.

However, even if I did not hand over the documentation and continued on my Ezic route, the game is constantly reminding the player that it is documenting them, where several endings (ending 3, 4, 11, 12, 13 and 17) lead to a game over state, where each ending concludes with the player being revealed to have cooperated with terrorist and is either arrested or executed. The endings and gameplay mechanics make player resistance visible, traceable and ultimately punishable. Even if the player covers their track successfully (leading to ending 19), it is another stress factor, adding additional mechanics to demanding gameplay. The didactic lessons shift from “survival requires compliance” to “surveillance makes sustained resistance nearly impossible”.

The surveillance novum creates a paradox in player agency. Earlier, compliance was enforced through economic pressure; the player had no choice but to process efficiently or watch their

family starve. The Ezic storyline introduces genuine choice, but the surveillance mechanic applies its own pressure. Supporting Ezic requires completing additional optional tasks while avoiding detection. However, staying loyal to Arstotzka requires only basic gameplay by maintaining the border checkpoint. The game rewards compliance with simplicity and punishes resistance with complexity.

Should the player choose to support Ezic, the game never validates this as the “correct” choice. The additional mechanical difficulty receives no clear moral reward. The Ezic ending is also ambiguous. The group claims to oppose a corrupt government, but their methods mirror Arstotzka's own tactics: secrecy, sabotage and vengeance against those who betray them. This raises the question: Is Ezic a liberation movement or simply another faction seeking power? The ambiguity denies the player a clear “good” ending. If Ezic succeeds, the player and their family survive, but the conclusion is bittersweet. It remains unclear whether the player has subverted the totalitarian state or simply exchanged one corrupt regime for another, perpetuating the very system they sought to escape.

However, remaining loyal to Arstotzka offers a different kind of ending. Completing the game through compliance unlocks the endless mode. The mode allows the player to continue the gameplay loop indefinitely. An ironic prize that reinforces the game’s critique. The player’s reward for loyalty is not freedom, but perpetual labor. The checkpoint continues, stripped of narrative and any option for rebellion, as only the mechanical pressure of processing documents continues. Compliance does not lead to liberation, nor to a better outcome for the player, but only to more work. The player has traded moral agency for job security, and the endless mode

makes the trade literal: an infinite loop of servitude without hope of change. Yet how players interpret these outcomes (compliance, resistance or endless labor) varies.

Subjectivity, Interpretation and the Didactic Lesson

Whether the restrictive gameplay compels compliance or inspires rebellion is ultimately determined by the player. The MDA framework assists with the immersion, but the player completes the experience through two distinct processes. First, ergodic choices: the gameplay decisions made by the player. They can either support Ezic or betray them by complying with Arstotzka. Second, interpretive decisions: the meaning players construct from those actions. A player who complied throughout might conclude that authoritarian systems make resistance impossible; another might conclude that they personally failed a moral test. The same ergodic path can produce different interpretive outcomes. This means the procedural rhetoric is subjective, shaped by both the choices players make and the meaning they derive from them. This describes the enthymematic gap-filling that is central to the didactic experience.

This variability is a strength of interactive media, fostering individualized learning experiences. The game's 20 endings encourage further exploration by replaying the 31-day campaign, exploring different choices, which means the experience is not short-lived and deepens the procedural argument. The subject matter is explored from various angles, where the player can comply, resist or even flee the country in ending 16 and 18. This ability to replay the game, with a variable outcome, is almost unique to interactive media (adventure or interactive books are exceptions), and can deepen the didactic experience.

Economic pressure, escalating complexity and constant surveillance are the core mechanics of *Papers, Please*. Together, they create the didactic lessons. A self-reinforcing system, creating a dynamic feedback loop, actively teaches the player how an authoritarian system functions and spreads its systematic cruelty. The economic pressure coerces moral compromises, complex mechanics enforce thoughtless cruelty and constant gameplay surveillance discourages resistance. These gameplay mechanisms demonstrate how authoritarian control operates, enabling players to recognize these patterns in real-world contexts. The recognition creates an analytical framework for understanding the concept of authoritarianism, how it functions and spreads its cruelty. This operational literacy is carried beyond gameplay, shaping how players understand power and control in their own lives. The ergodic experience shapes this understanding, the procedural rhetoric makes the argument and the SF conventions add the societal critique, enhancing the overall societal commentary that *Papers, Please* portrays.

Fallout: New Vegas Analysis

Fallout: New Vegas' Sandbox

Fallout: New Vegas' ludo (how the game is played) is based on a simple yet important gameplay mechanic: the sandbox. The sandbox, briefly explained, is often featured in open-world games and mirrors the concept of real-world agency. The metaphor emphasizes building your own path and alters the approach to gameplay and narrative. Many gameplay elements are loosened, giving the player more control over gameplay and agency. This agency becomes important for the ergodic experiences, where the player's control over the narrative and story world changes the procedural argument and the didactic experience.

Papers, Please's ludo focused on restrictive gameplay and a linear narrative, where the Fallout franchise emphasizes freedom and exploration by utilizing the sandbox to achieve these concepts. For example, *Fallout: New Vegas'* opening cutscenes and tutorial area illustrate this quite clearly. The player takes control of the Courier, an unnamed protagonist in the lore. The Courier's task is to deliver a package to Mr. House, the overlord of New Vegas, the last remnants of Las Vegas after the nuclear war. The package contains a platinum chip, but before the Courier can deliver it, they are ambushed by raiders, led by a man in a checkered suit. The Courier is captured and taken to a nearby graveyard, and without explanation, is summarily executed and buried in a shallow grave. However, this is not the end of their journey, as they are rescued by a friendly robot and nursed to health in the nearby town of Goodsprings. From here, the player takes control over the Courier, and after a brief tutorial, is given a single objective: find the man in the checkered suit and recover the platinum chip.

This creates the game's starting objective and leads into the main questline. However, the player receives no additional information on how to find the man or the platinum chip. They are expected to solve the mystery themselves by traveling into the open world and exploring the Mojave Wasteland (the game's sandbox). Through the ergodic experience, players create their own unique character/experience by traversing the game's world, interacting with NPCs (non-playable characters) and factions across the Mojave Wasteland. The lack of guidance means the game never forces the main objective, and the player can ignore finding their killer or the platinum chip and instead pursue other storylines, factions or simply wander the wasteland. The game rewards exploration and experimentation, as the Courier's motivation is player-driven and not mechanically enforced. This creates a different didactic function, not a linear argument about

systemic oppression but an experimental space where players construct personal understanding of moral complexity through enacted choice and consequence.

However, it is important to note that true agency remains impossible within video games. As Aarseth establishes, even the most open cybertext operates within designed parameters (Aarseth 78), and Bogost's procedural rhetoric functions precisely because player choices are constrained by authored systems (gameplay rules and limitations on the game engine). The sandbox does not offer true agency but rather expanded sequencing. Players choose the order and selection of content, but outcomes remain finite and pre-designed, albeit numerous. *Fallout: New Vegas* offers more paths than *Papers, Please*, but both games ultimately guide players through authored experiences. The difference lies in the illusion of agency: Fallout's sandbox makes players feel they are constructing their own narrative, and that produced feeling, whether or not it feels genuine freedom, is sufficient to produce the didactic experience.

Exploring Morality through the Avatar

The sandbox's emphasis on freedom fundamentally alters the player's agency and the didactic experience. Rather than teaching how authoritarian systems function through forced participation, *Fallout: New Vegas* creates an experimental space for players to test moral frameworks through choices and consequences. This is where the avatar, the in-game character representing the player, becomes important. Central to *Fallout: New Vegas* is the Courier (the avatar), who serves as an extension of the player's choices, ethics and morals. This form of ergodic learning can be seen as what I term an "identification gateway" and is crucial for ethical examination.

Fallout enables this examination by refusing to provide direct moral feedback. Unlike games that clearly label choices as good or evil (The Fable series, The Mass Effect series etc.), Fallout presents morally grey decisions without guiding the player toward a "correct" answer. The Courier allows the player to immerse themselves in the game's universe, becoming part of the story and narrative, and is critical for the didactic experience. When the player is immersed, their choices become a natural extension of themselves, and allow Fallout's sandbox to teach through the ergodic experience.

When players return for subsequent playthroughs, the experience shifts. Familiarity with the game's system and narrative alters immersion, transforming the identification gateway into what I term "roleplay distancing". Rather than the Courier serving as a direct extension of the player's own ethics, the avatar becomes a tool for experimentation. This distance allows the player to explore choices, moral frameworks and gameplay styles they might not personally hold. The sandbox becomes a safe space for testing, depending on which moral or ethical path they wish to explore. However, both forms of engagement remain fluid; a first-time player can assume a deliberate roleplay and returning players can still immerse themselves personally in the narrative.

However, the identification gateway is typically strongest during the first playthrough. *Fallout: New Vegas* actively invites replay through its narrative and game design. The faction system (examined in detail later) ensures that supporting one group locks the player out of content with opposing factions, making it impossible to experience everything in a single playthrough. Beyond factions, the game's skill system creates different gameplay experiences. A ranged combat build plays entirely differently from a melee-focused Courier. A player investing in energy weapons and science locks the player into a different gameplay style than ballistic

weapons and explosives. Even dialogue changes based on character build, where the same situation can be resolved through different skills depending on the Courier's strength.

One notable example involves Caesar, leader of one of the game's major factions. The player learns early that he is sick (suffering from a brain tumor). A high-medicine Courier can recognize the symptoms, diagnose and offer treatment, an option that is unavailable to other builds without high medicine skills. During the surgery, the player can deliberately botch the procedure, assassinating Caesar while escaping persecution by framing it as a medical complication. This allows players to infiltrate an enemy faction, eliminate its leader and shift allegiance, which is a narrative path only accessible through specific character investment. Such moments are not uncommon and reward players for their build choices with unique story opportunities, reinforcing the incentive to replay with different skill allocations. This replay incentive is crucial for the shift from identification to role-play distancing.

Both forms of roleplay enable moral exploration. *Fallout: New Vegas* raises genuine ethical questions throughout its world: When is violence justified? What do individuals owe to strangers in a hostile environment? Is personal survival more important than collective good? Can morality and civility survive in a wasteland that thrives on survival of the fittest? The game's world and SF conventions provide critical distance, allowing players to engage with these questions without real-world political baggage or moral interference. Identification creates emotional investment in consequences, while role-playing distancing enables experimentation with ethical frameworks the player might not personally hold. This allows for various playthroughs, and the flexibility of the gameplay and narrative is what distinguishes Fallout's didactic function from *Papers, Please's* linear more forced perspective. Players are not only allowed, but expected to explore

and experiment, drawing their own conclusions and therefore, their own didactic meaning from the game. This moral exploration from the protagonist avatar operates through Fallout's mechanical systems, which will be examined and analyzed through the MDA framework to understand how sandbox mechanics create this experimental space.

The Sandbox and MDA

The mechanics within *Fallout: New Vegas* were designed to give the player more control. As early as the tutorial, the player is given almost complete control over the Courier, allowing them to shape and change their avatar to fit them perfectly. The first of these mechanics is character creation, where the player can alter the Courier's name, aesthetics (gender, hair, eyes and general look), skills and abilities, making each player's Courier unique. A part of their character creation is allocating stats (statistics), where the acronym S.P.E.C.I.A.L. (Strength, Perception, Endurance, Charisma, Intelligence, Agility and Luck) describes this system (fig. 18). Each stat has a range from 1-10, making the Courier better or worse in each statistic, and the player can allocate them as they see fit. Additionally, some perks and traits enhance the player's stats, which also alter the approach to the game. The perk "four eyes" (fig. 19) essentially provides bonuses to the character for wearing glasses and penalties for removing them.

Fig. 18. Showcasing the Perk Selection Screen.

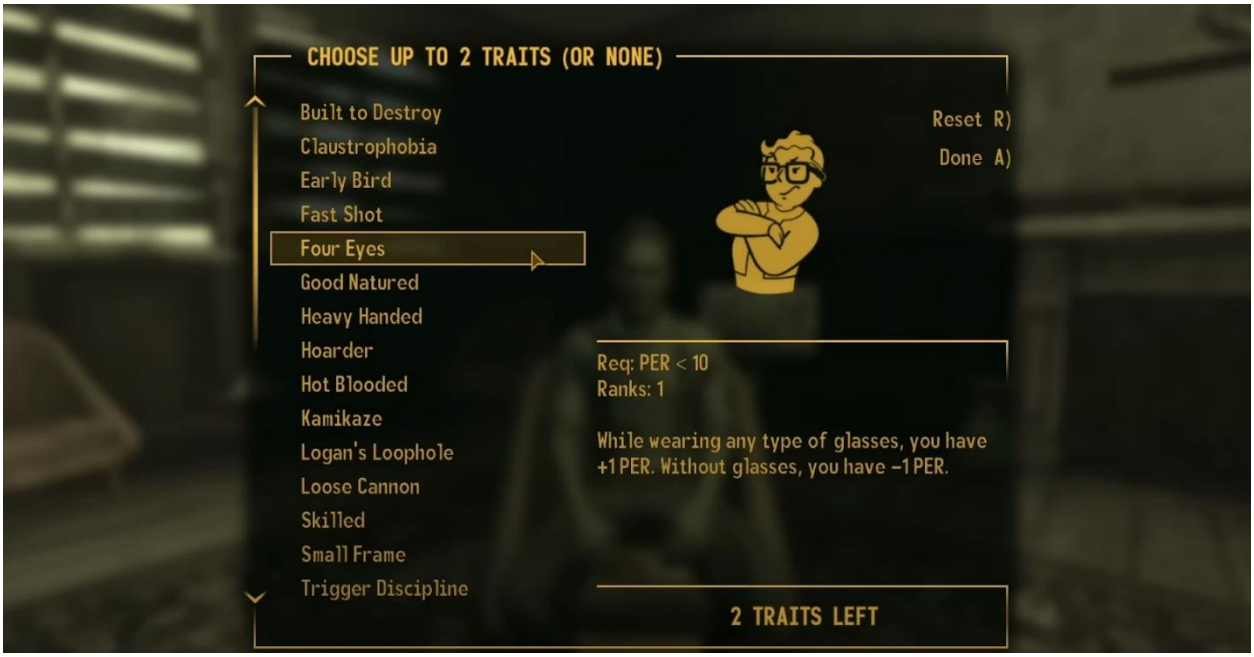

Fig. 19. Showcasing the Trait Menu.

These mechanics generate varied forms of dynamics and different stat allocations, enabling different solutions and approaches to problem-solving in the game. A high-charisma Courier can persuade their way through conflicts; a high-strength or agility Courier can solve them through violence and a high-intelligence Courier finds technical solutions to their problems. The game adapts to player choices, creating a personalized gameplay experience rather than a single prescribed path. This personalization begins with the character creation system, a mechanic found in many RPGs (Role-Playing Games) that creates the aesthetic of authorship.

However, unlike RPGs with predefined protagonists *Fallout: New Vegas* players create their own character and control it for the entirety of their journey. This creates a shift in emotional experience. *Papers, Please* creates forced complicity through its restrictive gameplay and Fallout creates creative agency instead. Players feel ownership over their Couriers' identity and choices, making moral consequences feel personally meaningful rather than systemically imposed. Central to this is the Proteus Effect, originally coined by Nick Yee and Jeremy Bailenson, which describes how players unconsciously conform their behavior to their avatar's characteristics (Yee). The effect introduces a novel approach to the ergodic literature, as players actively participate in the game as themselves or a specifically designed character, envisioned by the player.

For example, the "Cannibal" perk allows players to consume corpses, enabling darker roleplay. The "Terrifying Presence" perk unlocks intimidation dialogue that rewards aggressive characters. Even intelligence affects moral tone. A courier with intelligence below 4 receives unique "low intelligence" dialogue, transforming serious moral situations into darkly comedic

exchanges (fig. 20). These mechanics do not force moral positions but invite players to inhabit specific ethical frameworks, deepening immersion by making the avatar's morality feel authentic rather than arbitrarily chosen.

Fig. 20. Showcasing Low Intelligence dialogue.

The Proteus Effect, paired with MDA and ergodic literature, defines Fallout's procedural argument: moral agency necessitates the freedom to experiment, fail and choose differently. Unlike *Papers, Please's* argument on systemic coercion and erosion of morality, *Fallout: New Vegas* teaches about morality through voluntary exploration of consequences and ethics. The

sandbox becomes a moral playground, a space where players can construct understanding through experimentation, rather than instructions.

Faction as Estranged Ideologies

One of the central gameplay elements that establishes exploration of morality is the faction system. The game features a multitude of different groups, each with its own ideologies, ethics and moralities, spread throughout the Mojave Wasteland. The Courier can interact and gain a reputation with each group, either becoming allies or hostile towards them. The game actively tracks this reputation, and unlike *Papers, Please,* which often keeps information hidden from the player, *Fallout: New Vegas* is overt about its information, supplying direct feedback to the player, allowing them to view their reputation with the faction at any time. (fig. 21) The transparency and active feedback give the player important information for decision-making that allows them to explore and control their choices directly.

This transparency creates a fundamentally different relationship with choice than *Papers, Please*. Where *Papers, Please* obscures information and consequences, leaving players uncertain whether their decisions were helpful or harmful, Fallout's visible and easily accessible reputation system ensures players understand the weight of their actions (fig. 21). Every choice is registered immediately, as helping one faction will see the player's reputation rise, while harming another will see the relationship deteriorate. This clarity makes moral choices feel more consequential. Players are forced to own their decisions because they have full knowledge of the impact their choices have on each faction.

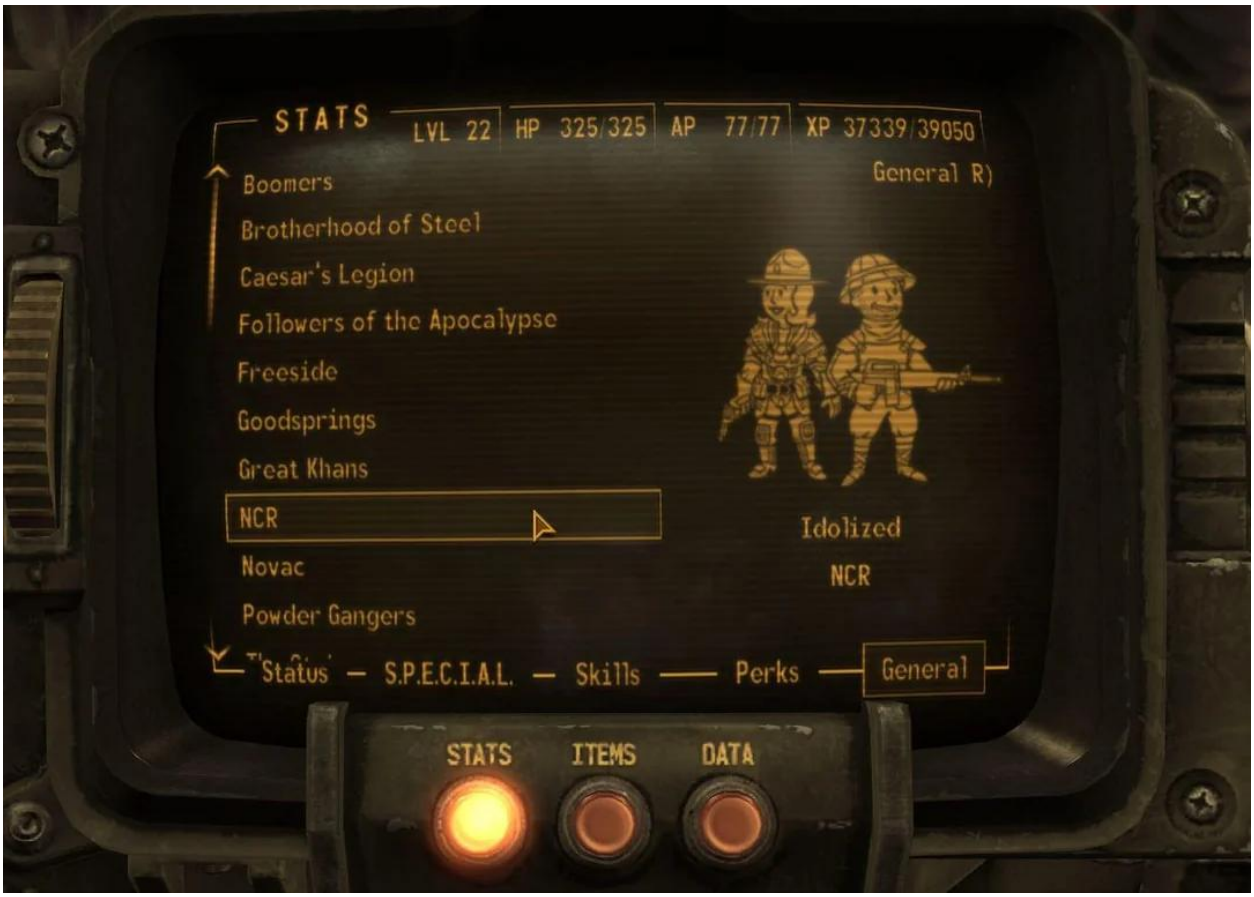

Fig. 21. Showcasing the Faction Screen.

For example, there are four major factions in the Mojave Wasteland: The NCR (New California Republic), Caesar's Legion, Mr. House and Yes Man. These four major factions represent different ideologies. The NCR represents democracy and liberty, but is corrupted through imperialism. Caesar's Legion represents an authoritarian and brutal regime, inspired by the Roman Republic and its values. Mr. House represents a technocratic autocracy, with an enlightened dictatorship maintained through technological surveillance and control rather than direct military force, and Yes Man represents an independent New Vegas, seeking liberation from the other three factions' control.

Each faction operates as an estranged version of recognizable real-world ideologies, warped by the post-apocalyptic wasteland. The Mojave Wasteland serves as the macro novum, a familiar American landscape (Las Vegas and the Atomic Era aesthetics) made strange through nuclear devastation. Within this estranged world, each faction represents old-world ideologies pushed to the extreme, where each faction becomes its own micro novum that players immediately recognize and can critically examine.

Because of their estranged nature, each faction overtly represents its values and ethics, allowing players to recognize the faction's real-world counterpart and how the wasteland warped them. For example, the NCR initially appears as the faction with the best morals and ethics, a functioning democracy in the wasteland. However, closer examination reveals how democratic values mask imperial ambition. The NCR's true intention is the annexation of New Vegas, justified through the rhetoric of "bringing civilization" and "liberty," but the faction cares little for the Mojave citizens. Their true goal is power, where their democracy serves as a cover for conquest.

The Legion represents a fascist authoritarianism taken to its extreme, where Roman military efficiency becomes enslaving brutality, and the right to rule is achieved through overwhelming power. The faction embodies wasteland social Darwinism without the guise or pretense that the other factions maintain. Mr. House represents technocratic rationalism corrupted by isolation. He believes his vast resources and superior intelligence justify autocratic control, believing he alone can "save mankind". However, he has been sealed in a life-support chamber for two centuries, disconnected from the society he claims to protect and understand. His "enlightened

dictatorship" reveals the hubris of believing that data and calculation can replace empathy and morals.

These factions represent extremes, even satirical takes on their respective ideologies. Fallout's dark humor transforms serious political critique into absurd, yet digestible exaggeration. Caesar's Legion cosplaying as Roman Legionaries, the NCR's bureaucracy as a bloated parody and Mr. House as an immortal capitalist, trapped in a technological tomb. This satirical estrangement enables critical examination precisely because the exaggeration makes ideological flaws overt and easy to critique. No major factions emerge as purely good, forcing players to weigh their options and compare compromised values against each other, supporting the faction they believe can rule the Mojave Wasteland and New Vegas. The novum and estrangement create the world of *Fallout: New Vegas* and the moral landscape players must navigate.

Even so, this satirical approach creates tension with Suvin's concept of estrangement. Effective cognitive estrangement requires the novum to be strange yet recognizable; distant enough for critical examination, but familiar enough for the critique to be perceived and recognized. When satire pushes toward absurdity, players risk dismissing the content as mere comedy rather than engaging with its underlying critique. However, as mentioned, the satire is used to alleviate the dark themes, allowing a more approachable game. Whether Fallout's satirical tone deepens or undermines its didactic function likely depends on the individual player, another manifestation of the subjectivity of video games. However, before examining player engagement, one flawed mechanic must be addressed: the karma system.

The karma system tracks the player's actions, categorizing them into good or bad karma, depending on the action. For example, murder, theft and certain narrative choices award bad

karma, and benevolent actions like charity and saving lives reward good karma. Through these accumulative points, the game applies a moral archetype to the player's character (fig. 22).

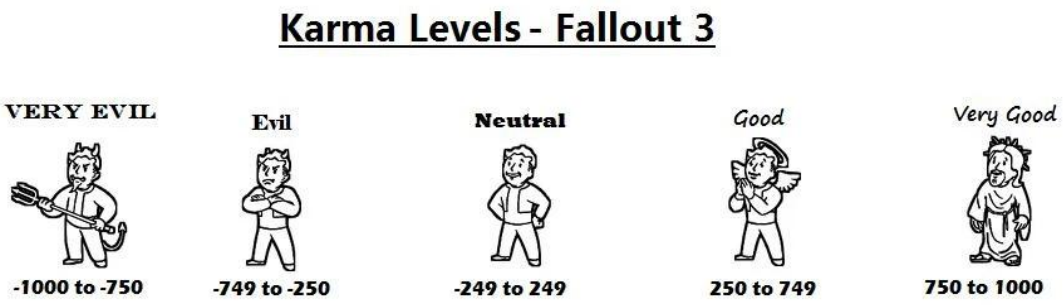

Fig. 22. The Karma Table and Points system from *Fallout 3*, identical system to *Fallout: New Vegas*

However, this system undermines the game's core design philosophy, contradicting the faction system's moral flexibility and has three critical flaws. Firstly, there are many instances where the game awards negative karma for neutral or grey actions. For example, stealing from hostile factions and groups (Bandits, Slavers and Cannibals, or one of the Major Factions) awards negative karma, even if they are enemies (fig. 23). Secondly, it works against the system's focus on agency and freedom, by attempting to define the avatar for the player, instead of allowing the player to determine it themselves. Thirdly, it has minimal mechanical impact; NPCs respond to faction reputation, not karma and therefore is not relevant for the procedural argument. For these reasons, this analysis focuses on the faction system, which better demonstrates procedural rhetoric's gap-filling nature, allowing players to interpret morality rather than having it defined for them.

Fig. 23. Message received after losing karma in *Fallout: New Vegas*.

Despite these mechanical failures, the karma system may still hold immersive value. Even without affecting gameplay, by virtue of its presence, the system can impact players' decision-making. The “bad karma” notification can influence how players approach gameplay. A player who considers themselves morally just can hesitate before stealing, not because of gameplay consequences, but because the label conflicts with their self-image or intended roleplay. From this perspective, karma functions as a mirror for players' ethics. It is mechanically insignificant, but still present, able to influence the player psychologically. However, this immersive function is inconsistent as it can also contradict the player’s own moral reasoning (stealing from slavers, for example). Yet, as Aarseth states, video games are by design subjective, focused on player perception and interaction and therefore this remains an important factor to consider.

Player Exploration of the Factions

The player will inevitably interact with multiple factions throughout their playthrough, as they form the narrative backbone of the game. To achieve a meaningful ending, the player must support one of the major factions (NCR, Caesar’s Legion, Mr. House or Yes Man). Beyond these

major powers, numerous minor factions populate the Mojave. These factions are smaller in size and are not directly tied to the main story, making them optional story objectives. However, they are often advantageous to befriend, as they reward the player for befriending them, offering equipment, perks and resources not available elsewhere in the game.

Like the major factions, the minor factions represent ideological concepts through satirical estrangement. The Followers of the Apocalypse, for example, are arguably the most ethical faction, led by scientists who seek to better humanity through medicine and education. Their ideals are to protect and support mankind, yet their naivety makes them vulnerable to exploitation by more ruthless groups and factions. Players engage with the Followers (or other factions) for practical rewards (medical supplies, skill training), but through completing their faction-specific questline (ergodic experience), encounter the procedural argument and didactic lesson: can pure altruism survive in the wasteland, or does naivety and goodwill enable exploitation? The answer emerges as the player explores the faction and its surrounding world. The Followers' goodwill is continuously exploited by the people they aid. Through gameplay, the player experiences that idealism without power proves to be a liability in a brutal and unforgiving world.

The karma system reflects this dynamic, albeit superficially. Assisting the Followers rewards the player with positive karma, yet, as established earlier, has no mechanical impact on the gameplay or narrative. The Followers remain exploited regardless of the player's moral standing. This disconnect reinforces the earlier critique of the karma system: it provides superficial moral feedback while the faction system delivers actual narrative consequences. However, it is an interlinked feature and can help guide the player towards a moral or immoral playstyle. Yet the

didactic lesson emerges not from karma telling players they did “good” or “bad”, but from witnessing how that goodness fails to protect the Followers from exploitation. Even if the player assists the Followers and increases their foothold in the Mojave Wasteland, that power is ultimately still abused by other factions and NPCs.

Faction, Choices and Consequences

The player is forced to pick and choose between factions, as they cannot ally themselves with every single one. For example, the NCR and Caesar’s Legion are directly opposed to each other, both ideologically and in military interests. Both are vying for control over the Mojave. If the player assists one of them, they will immediately gain infamy with the opposing faction, making it impossible to befriend both. Furthermore, some factions’ questlines determine the fate of others. For example, the Great Khans are a minor faction that essentially are organized bandits. The Legion wants their support, but the NCR wants the faction destroyed. The player must choose: support the NCR by destroying the Great Khans, or preserve the faction to please the Legion, or find an alternative solution that satisfies neither major power. Regardless, each path taken by the player closes another, forcing commitment rather than compromise.

The importance of choice and consequences in *Fallout: New Vegas* is one of its didactic lessons, supported by the game’s transparent feedback. Players are given clear information on faction ideologies, their goals and the player’s current reputation with each group. With this information, the player has to make an informed decision about who they support and oppose. This creates the aesthetics (MDA third layer) of self-expression and discovery, as the player can choose the faction that aligns with their own morals and ethics (self-expression) or choose to explore

ideologies they personally oppose through roleplay experimentation (discovery) (Hunicke et al. 2).

The game does not favor any particular choice. Each faction is designed with flaws and strengths in mind, and the game refuses to validate or condemn the player for their chosen allegiance, allowing exploration of the faction to answer that for the player. Ultimately, it is the player's choice that matters; as previously mentioned, the game's framework is designed around choice and consequence. The player must evaluate ideologies on their own terms, applying their own ethical frameworks rather than following the game designer's implicit guidance. However, whether players engage through identification or roleplay distancing can affect how they approach these choices.

This creates a didactic space where players explore different moral frameworks (authoritarian vs. democratic vs. technocratic vs. independent) through enacted choice rather than lecture. Unlike *Papers, Please*, Fallout emphasizes player agency, where they learn by choice, rather than coercion. But this agency carries responsibility for the player, as each action taken reshapes the Mojave Wasteland around them. From changes in power structures between factions to altering the landscape, the game makes each choice feel consequential. This weight encourages replay. Because consequences are visible and permanent, players curious about alternative outcomes must start on a new playthrough to experience a different path. Each playthrough produces a different Mojave, and cumulative experience across replays deepens the player's understanding of how ideology, choice and consequences interconnect.

The choices made can have immediate, visible consequences or hidden ones that are revealed later in the game's story. For example, early in the tutorial, the player is presented with the first

faction choice: support the town of Goodsprings (where the player was nursed back to health) or support the Powder Gangers (a group of outlaws that wants to take control of Goodsprings). Both groups are minor factions with opposing goals. The player must decide which faction to support, where player input ultimately decides the fate of the faction and Goodsprings, permanently altering the town and the player's standing with each faction.

From a moral standpoint, supporting the inhabitants of Goodsprings would be the correct choice; however, the Powder Gangers are a larger group operating in the local area, which means the player can encounter the faction later in the game. The Powder Gangers (And all other Factions) remember the player's action, treating them as an ally or enemy, depending on their choices, throughout the rest of the game. Allying with the faction reduces early game difficulty as many of the would-be enemies become allies instead, and offers more resources for the player. However, the Powder Gangers are an enemy of the NCR, which can strain the relationship with one of the major factions, simulating a larger web of choice and consequences in the game's world.

This interconnected system creates *Fallout: New Vegas's* procedural argument: actions have lasting consequences, simulated by the in-game web of choices, that ripple beyond immediate context. This system is crucial to the procedural argument, as the game tracks faction relationships, NPC survival, and geographical changes in the world to simulate an adaptive and evolving world state. The choices the player makes can alter major outcomes and the visible changes ensure players recognize their impact. Unlike *Papers, Please*, which reduces player agency with ambiguity and withholds consequences, Fallout makes choices visible. Should the player ally themselves with the Powder Gangers, then the inhabitants of Goodsprings are killed,

closing any further potential storyline and interaction with them. This is an example of a permanent consequence that has both immediate and long-lasting effects on the playthrough, illustrating the procedural arguments and creating the foundation for the didactic lessons. Because of the less restrictive gameplay, players navigate this freedom differently, creating a varied didactic experience for each player. Unlike *Papers, Please*, which utilizes its restrictive gameplay to teach a singular lesson.

The Didactic Lessons

The procedural argument is straightforward: the player's actions have consequences with visible, lasting effects on the game's world. However, the didactic lessons that arise from the ergodic literature, procedural argument and SF conventions are more nuanced, as two roleplay styles emerge. These two styles are based on the previously introduced terms: gateway identification and roleplaying distancing. Both terms define what didactic lessons are received by the player (gameplay behavior), which can vary depending on their subjectivity (how the player interprets the gameplay and SF conventions).

The immersive player uses their own moral framework for reference, applying their ethics to moral dilemmas and ideological conflicts the game presents. With this framework, it becomes a moral self-examination, as they learn to identify and take ownership through the choices they make. With a multitude of choices and visible consequences, players discover what they value when their principles conflict with pragmatism, defining moral boundaries through action. For example, an immersive player that supports the NCR and its belief in democracy might face a difficult choice: overlook NCR war crimes for "the greater good", or maintain moral purity at the

cost of their faction's success. The game proposes moral reflection for the player and poses the question: What is morally and ethically correct for them?

There is also the karma system, which can impact or alter the immersive player. As mentioned, even if the system is mechanically insignificant, the message and auditory sound that plays when gaining good or bad karma can influence player agency. This can be both favorable, as a moral player might find it rewarding that the game acknowledges a positive act, or it deters them from a negative act. However, this system is implemented poorly because of how generalized the karma system is. Returning to our earlier example, stealing from raiders, murderers or slavers punishes the player with negative karma; the game essentially tells the player, "stealing is bad". In a vacuum, this moral message makes sense, but in the context of the game (stealing from murderers and slavers), the act seems less deplorable. The karma system feels tacked on, not engaging with any of the core systems in the game (gameplay, narrative, factions, etc.) and therefore is ultimately at odds with the game's emphasis on morally grey storytelling.

The role-playing player approaches the game from an experimental distance, allowing them to set aside their own personal values, utilizing the game's replayability to explore different gameplay styles. For example, various approaches to combat (Firearms, explosives, melee) or different approaches to the social aspect (Charisma, Barter and Intelligence) allow players to assume various identities depending on their play styles. The Proteus Effect manifests clearly here; players unconsciously conform their behavior to their avatar's characteristics (Yee).

A high charisma and intelligence Courier would lean more towards Mr. House and his technocratic state, where a melee-focused player would favor Caesar's Legion and their brutal approach to combat. The Legion's emphasis on melee combat creates mechanical and

psychological alignment for players building melee-focused characters, making the ideological choice feel natural. This allows players to experience ideological positions they personally oppose, playing as the authoritarian Legion to understand fascist logic or supporting NCR imperialism to examine democratic corruption. Through the role-playing system, the player gains a deeper understanding of the ideological system without personal moral investment, testing frameworks through consequence rather than personal intent.

Both immersive and experimental players engage in role-playing, exploring various facets of morality and ethics. Although the didactic lessons differ depending on the gameplay style and narrative choices, the two approaches allow players to learn and engage with the game's overall theme of ideology. The immersive player applies and examines their own ethics, while the experimental player tests a broader range of moral frameworks. Both nurture exploration of identity and agency, demonstrating Fallout's versatility as a didactic space.

Different Ludos, Different Didactic Lessons

Having defined how *Fallout: New Vegas* creates its didactic lessons, it is important to compare it to *Papers, Please*. Throughout the Fallout analysis, I have used *Papers, Please* as a comparison tool to demonstrate how Fallout's ludo creates its didactic experiences. The result is that varied ludo styles create distinct ergodic experiences, altering both the procedural arguments and didactic outcomes. This means that gameplay design choices shape learning experiences, whether developers explicitly frame them as educational or not. *Papers, Please* was designed with a very restrictive gameplay in mind to bring the authoritarian state to life. The surveillance and oppression are felt through the restrictive gameplay, structuring the didactic lesson by restricting the player's freedom and agency. The time pressure, resource scarcity and constant

threat of game over were intentionally designed to make the player's choices and actions feel limited, creating the procedural argument that systemic complicity is inescapable.

Fallout: New Vegas, in contrast, alters its ludo to encompass more freedom for the player. The gameplay gives more control by losing the restrictive gameplay elements that *Papers, Please* used to limit the player's agency. The player is not forced to follow a specific gameplay style to succeed, as they have the freedom to formulate their own approach, contained within the sandbox, that allows for player experimentation. This creates varied procedural arguments through multiple design choices: faction transparency enables informed decision-making, consequence visibility ensures accountability and even complete independence becomes a viable path.

This range is exemplified by the fourth ending, where the player rejects all major factions. The ending is centered around the essential NPC, Yes Man. A robot that has been reprogrammed by Benny (the man in the checkered suit) and when the player eventually regains the platinum chip, Yes Man offers them the option to conquer New Vegas and the Mojave Wasteland for themselves. This ending sees the Courier refusing to cooperate with any of the three major factions, where they are either destroyed or forced out of the Mojave Wasteland. Additionally, it also allows complete control over the minor factions' fate, where the player can pick and choose which survive and which are destroyed. It is, however, important to mention that this path is not presented as correct or optimal, but merely another ideological choice among many, for players who refuse to cooperate with any of the major factions.

Players learn through ergodic engagement, choosing factions, completing quests and navigating the estranged wasteland on their terms. This creates what could be perceived as a contradiction:

Fallout New Vegas' broader freedom produces more varied but less focused lessons, while *Papers, Please's* restriction creates singular but deeper critical engagement. Both approaches serve different didactic functions. Fallout enables moral experimentation and *Papers, Please* frames a specific concept: confrontation with systemic complicity. However, to demonstrate the limitations of this approach, the paper will examine when a game's ludo contradicts its intended message. When gameplay mechanics are attempting to frame a specific didactic lesson, but the narrative enforces a different message. This failure of alignment between gameplay and narrative is what will be examined through *Cyberpunk 2077*.

Cyberpunk 2077 Analysis

Cyberpunk 2077 has a similar game design to *Fallout: New Vegas*. An open-world that emphasizes player freedom and agency, but with a narrative design similar to *Papers, Please*, restricting player agency and choices in the main story. This means Cyberpunk is focusing both on player agency through the open-world, but with a more controlled narrative, where the player's actions are limited.

The story takes place in the year 2077. The world has devolved into anarchy, where the original power structures (nation and states) on a national scale have been broken down and taken over by "Mega Corporations". These corporations compete for control over the world, and the nuclear wars they have waged on each other have rendered most of the earth uninhabitable. The remaining population lives in overcrowded cities, also known as "megacities". Crime within these cities is rampant, where anarchy and chaos rule society, and the remainder of humanity preys on each other to stay alive.

Within this chaos, the player takes control of a mercenary named V. V is an upstart and wants to make a name for themselves, alongside their partner Jackie, by stealing a piece of technology known as the “Relic”. A biochip that allows the storage and manifestation of a human psyche, which is known as an “engram”, capable of granting immortality. The mission turns to chaos when Jackie is killed, forcing V to install the biochip to survive. Before V can deliver the biochip, their fixer (an intermediary between clients and mercenaries) betrays them. Much like the Courier in Fallout, this should be V’s end, but they survive thanks to the engram, which restores them to life. However, the engram already had a human psyche stored on it, and its activation starts overwriting V’s mind. The game’s narrative becomes a race against time, as V must remove the biochip before it kills them.

Ludonarrative Dissonance in Cyberpunk

This urgent narrative creates the game's central design contradiction: the story demands immediate action to save V's life, yet the open-world mechanics encourage exploration of dozens of unrelated side activities. This disconnect between narrative urgency and mechanical freedom creates ludonarrative dissonance and is observed early into the game’s structure.

Conversely, before Act 1, the game does achieve ludonarrative harmony. In the tutorial, the player is restricted to a single city district, confining the player to a smaller area of the map. In this small area, the game achieves ludonarrative harmony, as the player can explore the city district freely, without narrative pressure. But after the tutorial ends, the full-game map becomes accessible, encouraging exploration, but the narrative becomes fixed because V is dying, which diminishes overall player agency. This is also observed by Nuozhou Chen in their paper *Links between Video Games and other Media: Ludonarrative Dissonance and Transmedia*

Storytelling, where they use *Cyberpunk 2077* and its anime counterpart, *Edgerunners*, as a case study for transmedia storytelling.

Chen describes issues with the game's narrative and gameplay: "Upon entering Act I, the narrative's temporality becomes fixed, and player agency diminishes. This leads to another manifestation of narrative dissonance as players divert from the main storyline to engage in side activities. Such behavior reveals incongruities between gameplay mechanics and overarching narrative themes" (Chen 6). Chen identifies the core problem, using narrative dissonance to explain inconsistencies between gameplay behavior and story pacing. This effectively explains the same issue that is highlighted by Hocking's ludonarrative dissonance: RPG conventions (reward exploration) clash with narrative demands (immediate action).

The established urgency is purely narrative, as no gameplay elements are setting a time constraint on the game. The player can spend hundreds of hours exploring Night City without the biochip overwriting V's mind. There is even a varied amount of gameplay mechanics that keep the player engaged, as Night City is teeming with unique NPCs, side missions and rewards (credits, weapons and upgrades). This creates a unique form of ludonarrative dissonance: the narrative insists on urgency while the mechanics permit infinite delay. The disconnect occurs between what the story tells the player and what the gameplay allows them to do, pulling the player in two different directions.

The player can choose to focus on the main missions, accepting the narrative's urgency. However, this is a sub-optimal choice, as Cyberpunk punishes the player for rushing through the story. Without engaging with key side content, the player is locked into two endings: The Devil Ending, where V signs over their mind to Arasaka (one of the most powerful mega-

corporations), or the Suicide Ending. These endings are objectively weaker, not merely in player preference, but in narrative structure and ergodic work. The Devil Ending sees V surrender their autonomy to the very corporate system the narrative critiques, while the Suicide ending offers no resolution or closure to the story. Both endings require minimal effort to achieve and reward the player with minimal mechanical and narrative satisfaction. The remaining endings, unlocked through specific side missions, provide greater narrative closure, character development and allow V to resist the systems oppressing them, aligning with the game's thematic societal critique.

The game features several better endings, most of which require completing specific side content to unlock. Each ending also has different variations depending on specific narrative choices made throughout the game, and although the best ending is subjective, the most hopeful conclusion is "The Star". In this ending, V survives the biochip's removal, but the neural damage leaves them with only six months to live. Alongside friends made throughout their journey, V leaves Night City, rejecting its technocratic capitalism in hopes of finding a better future. Additionally, there is also the "Temperance" ending, allowing the engram to overwrite V's mind and take over their body as Johnny Silverhand (the personality stored on the biochip). Although V is gone, Johnny is given a second chance at life and attempts to preserve V's legacy and begin anew. The Secret and Phantom Liberty endings have similar bittersweet themes, where V survives, but always at a cost. These endings reward ergodic engagement, as additional investment into the game's side content is required to unlock them. This creates a paradox: the narrative demands urgency, yet the most thematically coherent conclusions require ignoring that urgency.

However, even though exploration is the correct choice, the game constantly reminds the player of imminent doom. V will occasionally hallucinate, cough up blood or view themselves as Johnny Silverhand (the person on the engram). This maintains the narrative tension, but it works against the player's agency, creating psychological pressure to rush through content, also noted by Chen: While the game introduces a "countdown mechanism" to instill urgency, it fails to enforce this in gameplay. This discrepancy manifests in inconsistent character interactions and narrative focus (Chen 6). This creates a no-win scenario for the procedural arguments: players who follow the narrative miss content, and players who explore feel cognitive dissonance. Either way, the didactic experience fragments as players cannot construct coherent meaning when mechanics and narrative contradict.

For instance, the player can spend 20 hours on buying an apartment, customizing their car or avatar, activities that make sense in an open-world game, but become absurd and even immersion-breaking when the narrative is constantly reminding the player that their avatar is dying. The procedural argument about player freedom is heavily muted when freedom contradicts survival.

Enthymematic Void

The procedural argument is not only undermined by ludonarrative dissonance, creating incoherent meaning, but also by the massive temporal and experiential gap between gameplay and story. *Cyberpunk 2077* features an expansive open-world with activities, individuals to interact with and unique places to explore, allowing players to easily spend dozens of hours disregarding the main story entirely. This creates significant narrative discontinuity as players lose track of plot details, character relationships and their motivation for continuing the main

questline. Normally, when these gameplay gaps occur, Bogost argues that the enthymematic nature of procedural rhetorics allows players to fill in knowledge gaps through inference and participation (ergodic engagement). However, *Cyberpunk 2077's* gap is too expansive. The sheer volume of divergent content and extended temporal distance from narrative beats overwhelms the enthymematic process. It requires an exceptional amount of effort to not only engage with the story but also to maintain narrative coherence across dozens of hours of gameplay that actively works against the plot's urgency and focus.

However, how does it then differ from *Fallout: New Vegas*? Both games have an expansive open-world, and both feature activities and quests that are not part of the main storyline. The simple answer is that Fallout's narrative and gameplay work alongside each other. First, there is no urgency in starting or completing the main quest as the narrative and gameplay encourage exploration, creating ludonarrative harmony. Secondly, Fallout's side content is usually rich in lore and narrative depth, expanding the world's lore that is often tied to the main quest. Both of these features allow the player to stay engaged with the main story while not actively participating in it.

Cyberpunk 2077's side content is a mixture, ranging from unique side missions that achieve the same narrative depth as *Fallout: New Vegas*, to repetitive, narratively empty content that serves only mechanical progression. This inconsistency is particularly disappointing given the game's thematic richness: the mega-corporations, transhumanist technology and extreme class stratification are some of the main themes that successfully create SF estrangement. Night City is recognizable capitalism pushed to a dystopian extreme. The main story missions and unique story missions engage meaningfully with these themes, from corporate exploitation to bodily

autonomy and systematic inequality. These elements create procedural arguments about how technology can amplify existing power structures and dehumanize individuals to a resource level. It uses these dystopian themes to showcase the same didactic message that *Papers, Please* exemplifies.

However, the game also features an exceptional amount of bloated content that serves no narrative or world-building purpose. Most of the side content is not unique, but instead repeated missions, referred to as "Side Gigs". These missions typically consist of the player engaging in repetitive content, ranging from gunfights, sneak missions, hacking, and feeding into a gameplay loop, without any narrative feedback. These side gigs are the most common form of side content, with a total of 86 missions that do not offer great variety, but are important for two gameplay resources: Street Cred and Experience, which are vital to make V stronger.

This concept of narratively empty content has become a staple in open-world games, with the biggest offender being the Assassin's Creed series, starting with *Assassin's Creed Origins.* Before Origins, *Assassin's Creed* was focused on smaller worlds, with a more linear, but meaningful story, where its minor open world supported the linear narrative, focusing on populated cities, to complement the parkour and stealth gameplay. With the shift to a fully open-world, RPG-style, Ubisoft decided to fill the world with the same bloated content found in Cyberpunk, diluting the game's identity. The player was no longer an assassin, but an adventurer, exploring a massive area, but with no narrative depth or reason why, created to reward the player with resources. These exploration rewards can overload the player with too many resources, further diluting the gameplay as the player no longer needs to rely on vendors or

quest rewards, removing any gameplay obligation to interact with side content. This is also true for *Cyberpunk 2077*.

In contrast, *Cyberpunk 2077's* meaningful side content demonstrates what the gigs lack. Questlines involving important characters like Panam, Judy and Rogue directly engage with the game's themes: corporate resistance, personal autonomy and human connection. These missions develop relationships that tie back into the main narrative and, as established, unlock the more thematically coherent endings. However, these substantial questlines are buried beneath the 86 generic gigs and random combat encounters, requiring players to sift through narratively empty content to find meaningful engagement. Players spend more time looting generic gang hideouts than engaging with the game's thematic critique and the enthymematic gap becomes a void where meaning is difficult, if not impossible, to form.

SF and Estrangement

Cyberpunk 2077's themes lean heavily into the soft SF classics, borrowing from Broderick's megatext to create instantly recognizable themes for estrangement. The dystopian city, class struggles and transhumanism are the main SF elements that the game establishes and leans into. However, ludonarrative dissonance also occurs with the SF themes. A core gameplay feature of Cyberpunk is "cyberware," which allows the player to install body modifications into V. These upgrades benefit the player, enhancing V's gameplay abilities. For example, the ability to turn invisible via translucent skin (stealth gameplay support), a second heart (to avoid death, combat support) or installing blades directly into V's forearms to offer a unique melee combat tool. All of these cyberware, from a narrative standpoint, come with a cost known as

"cyberpsychosis", a disease that turns cyberware users gradually insane, depending on how much cyberware they install.

The disease serves as a core narrative tool in both *Cyberpunk 2077* and *Cyberpunk: Edgerunners* (the anime counterpart), highlighting the horrors of individuals who lose themselves to cyberware, unable to distinguish between flesh and machine. This is illustrated in *Cyberpunk: Edgerunners,* where the character Jimmy Kurosaki states, "I've seen plenty of chrome jocks go psycho over the years. Some metal's simply not meant to mix with meat. Your 'ganic body, your soul, gets pushed to the edge" (All Eyez on Me 6:27-6:40).

Narratively, cyberpsychosis is established in the game; however, there are no implemented gameplay consequences for the player. The only limit is the amount of body modification available to V, as they cannot suffer from cyberpsychosis. This creates a fundamental contradiction in the game's SF critique. *Cyberpunk 2077* warns against dehumanizing technology; overuse of cyberware dilutes or consumes the soul, establishing a narrative critique of mankind's dependency on technology. However, procedurally, the game rewards maximum augmentation, making V stronger without consequence. The enthymematic gap players should fill (technology has costs) is negated by gameplay that argues "install everything without fear". The SF estrangement is muted because mechanics contradict the game's themes. Players cannot critically examine the dangers of transhumanism when gameplay rewards unchecked augmentation.

Other games demonstrate how the same mechanics can reinforce their own themes. *World of Warcraft's Battle for Azeroth* expansion featured N'Zoth, a void god with Lovecraftian themes centered around corruption and madness. N'Zoth offered players extraordinary power, which

could increase damage dealt, survivability and unique abilities that boosted overall player power and performance. However, as players accumulated these powers, they also gained corruption points, which altered their appearance, triggered auditory whispers and introduced increasingly deadly void mechanics scaling with corruption level. Players who embrace too much power risk death in challenging content, mechanically reinforcing the warning that power has costs.

Cyberpunk 2077 lacks any equivalent punishment systems. Cyberpsychosis remains purely narrative; V can install every available cyberware without consequence, and the critique of transhumanism becomes hollow when gameplay actively rewards what the story condemns. *Cyberpunk 2077's* expansion, *Phantom Liberty*, attempted to address this with a perk called "Edgerunner", a reference to the animated series (fig. 24). The perk allows players to exceed their cyberware capacity at the cost of reduced health, with a chance to enter a "Fury" state during combat. This directly references cyberpsychosis, but the implementation still fails to reinforce the narrative critique: the health reduction is minimal, the Fury state provides powerful combat bonuses, while the player remains in full control. The overall effect rewards over-augmentation rather than punishing it. Even when attempting to mechanically represent cyberpsychosis, the game undermines its own thematic warning. Furthermore, the perk is entirely optional and disconnected from the narrative; players can ignore it completely, and the main story never acknowledges or incorporates cyberpsychosis as a gameplay consequence.

Fig. 24. The perk “Edgerunner” with description.

Ludonarrative Harmony in *Papers, Please* and *Fallout: New Vegas*

Cyberpunk 2077's procedural argument and didactic lesson become heavily diluted and difficult to perceive due to the ludonarrative dissonance and the large enthymematic gap. However, it is important to distinguish how *Papers, Pleas*e and *Fallout: New Vegas* achieve ludonarrative harmony.

Papers, Please’s ludonarrative harmony is based on the gameplay and narrative working in tandem. The narrative establishes the authoritarian state of Arstotzka, and the gameplay enforces the narrative theme. The player is a cog in a machine, helpless to break free of the system, and therefore must enforce it. The restrictive and punishing gameplay makes the player quickly fall

in line with specific gameplay rules, making the player feel the pressure and oppression, enforcing the dystopian fantasy, which allows the game to more easily produce the procedural argument on authoritarian regimes. There are no open-world or secondary tasks; all gameplay and narrative are contained within a linear progression, allowing for a designed procedural argument. Although the narrative and gameplay are strict, the ambiguous nature of Arstotzka and the lack of narrative closure produce the enthymematic effect, allowing players to fill in the gaps and achieve the didactic experience.

Fallout: New Vegas achieves ludonarrative harmony through similar methods. However, unlike *Papers, Please*, the procedural argument and didactic lesson are not reliant on the main story. The game centers on player agency, encouraging players to create their own path and make their own choices; a philosophy carried through every aspect of gameplay and narrative. This harmony succeeds because the game world is rich in lore and meaningful content, and because both mechanics and story encourage freedom rather than urgency. The journey becomes the lesson; players can engage with the world on their own terms and conclude their experience when they feel their story is complete. *Cyberpunk 2077* cannot achieve this because its narrative demands urgency. V's survival depends on completing the main quest, yet the open-world mechanics encourage leisurely exploration, creating the dissonance that mutes its procedural argument.

Cyberpunk 2077 attempts to combine both approaches. Fallout's open-world freedom with *Papers, Please* narrative urgency, but achieves neither's harmony. As established, the narrative demands immediate action while mechanics reward leisurely exploration, and the better endings require ignoring narrative urgency entirely. The game's thematic richness, corporate

exploitation, transhumanism and class struggle is buried beneath repetitive content that dilutes meaningful engagement. Even the SF critique fails mechanically: cyberpsychosis warns against over-augmentation narratively, but gameplay rewards maximum cyberware without consequences. Where *Papers, Please* aligns restriction with their theme, and Fallout aligns freedom with their themes, Cyberpunk's mechanics contradict its themes at every level. The procedural argument fragments, and the enthymematic gap becomes void.

While *Papers, Please* and *Fallout: New Vegas* create didactic experiences accessible to most engaged players, *Cyberpunk 2077* requires exceptional ergodic discipline to extract its arguments. The dissonance and enthymematic void do not eliminate learning; they make it effortful, inconsistent and available only to players willing to construct meaning despite mechanical contradictions. This demonstrates that didactic potential exists on a spectrum: alignment creates broad accessibility, while misalignment creates selective, effortful learning.

However, it is important to note that the enthymematic nature and player experience are subjective. The argument is that ludonarrative harmony makes the ergodic experience easier, achieving what Aarseth describes as "intimacy" with the ergodic text. However, there is always a risk that individuals might not achieve intimacy with the game, and therefore become a failure case, where the procedural argument and the didactic lesson are lost. Although *Papers, Please* and *Fallout: New Vegas* achieve ludonarrative harmony, some players might find the restrictive gameplay of *Papers, Please frustrating*, or the freedom of *Fallout: New Vegas too* confusing, lacking guidance. However, ludonarrative harmony creates a cleaner space for enthymematic engagement, producing a more defined gameplay experience that allows for greater ergodic intimacy.

Discussion

Are Video games superior?

The paper has attempted to illustrate the importance of video games as a didactic medium capable of conveying real-world concepts, much as books do for their readers or paintings do for their viewers. However, video games are not inherently superior for learning. Their didactic potential depends on a previously mentioned concept from Aarseth: intimacy with the ergodic text. This is the natural engagement that merges when players connect with the cybertext and are encouraged to work through it (Aarseth 4). Without this intimacy, players lose interest, become frustrated or disengage entirely, which means the didactic potential is lost.

The engagement with the ergodic text is subjective. Some individuals prefer challenges in video games, others prefer freedom to explore and express themselves, while others prefer a tailored and guided experience, or a combination of different gameplay genres. Regardless, the player needs to be willing to play the game, and if the gameplay is too frustrating, too open and confusing, or too narrow and restrictive, players fail to achieve ergodic engagement. However, when intimacy is achieved through effort, it creates a personal investment for the player, and the interactive nature means the experience is not passively absorbed, but actively learned, which can allow for a deeper engagement than traditional text.

For example, *Fallout: New Vegas* primarily explores morality and ethics, using the freedom of the sandbox to teach a varied range of didactic lessons. Players can nurture their agency or learn about the horrors of nuclear war and how society is rebuilt around survival that erodes civil values. These are some of the lessons and experiences the player can gather from the game;

however, it is not tailored towards one specific argument, and expects the player to find their own meaning in the game. This lack of guidance through the narrative can be both freeing and intimidating for the player. *Papers, Please* offers a different, more tailored and linear experience, allowing the game to create a specific didactic lesson on the horrors of the authoritarian state. Video games are, therefore, versatile in their procedural arguments and didactic lessons, but this form of literature is not for everyone, as it requires an active effort to achieve this deep level of engagement.

What About Other Video Games?

This paper has examined only three specific examples, limiting its scope. Different genres construct procedural arguments and didactic lessons differently, and therefore could warrant future research on different genre types. RTS (Real-Time Strategy), FPS (First-Person Shooters), or puzzle games, among others, could be viable options. Each genre emphasizes different core gameplay elements, meaning the MDA framework would produce different experiences, altering both the procedural argument and the didactic lessons. Furthermore, this paper's examples are all Western RPGs with SF themes. Other genres and themes could produce entirely different didactic dynamics, warranting further exploration.

Furthermore, another important factor is whether the game's design was made as a learning experience or is a byproduct. Video games have evolved over the years, and some are designed with the explicit intention of teaching an important lesson. *Papers, Please* is an example where restrictive gameplay and limited narrative are able to construct a detailed didactic lesson. Another interesting example is *The Stanley Parable*. The game is an interactive, meta-narrative that explores the themes of free will, agency and the constraints of game design. The game

features a narrative that evolves from a disembodied voice into an actor that the player must either obey or defy. The narrator itself highlights and comments on various of game conventions, intentionally breaking the fourth wall and actively teaching the player on game design. One of the most notable examples is the various endings that all emphasize a completion of a loop, rather than a true ending. *The Stanley Parable* illuminates the restrictive nature of video games, that players are unable to work outside the constraints of the game, breaking the illusion of agency and free will (Aarseth 79). The game's didactic lesson could be that illusion in video games also demonstrates a lack of agency and choice in real life, that individuals work within set constraints that force them into specific choices, giving them an illusion of control.

These chosen examples showcase and illustrate that video games have a didactic potential, one that extends beyond the cases in this paper. It could be important to examine different genres, design intentions and thematic focuses, and how these variables can produce different procedural arguments and learning experiences. However, while this paper has focused on games where didactic lessons emerged organically from gameplay, some games have been designed for educational purposes, while others were adapted for classroom use.

Educational Applications

Video games have seen representation within education. The most notable example is *Minecraft*, which has been featured as a tool for learning in primary school, teaching children geometry and fostering imagination by building shapes out of squares ("The Educational Benefits of Minecraft"). The game's lack of a clear goal and a focus on gathering resources to survive and build, paired with the interactive medium, allows players to explore a sandbox where the only limit is the imagination.

Another notable example is *The Oregon Trail*. Created in 1971 as a text-based game and later published by MECC in 1975, it was used to teach resource management, geography and American history to children (Warlock). The main objective of the game was to lead a covered wagon party from Independence, through the state of Missouri, to the Willamette River and finally arrive in Oregon itself. Along the way, the player had to manage resources (food, spare parts for the wagon, and medicine) to keep the wagon party healthy and have the means to reach Oregon before the wagon broke down. The game is known for its brutal difficulty, as party members would often contract diseases or suffer serious damage to the wagon, which led to a cascading effect, ending with the player's party dying, forcing a full game restart. The lack of saving, and the brutal difficulty meant that players had to weigh their options, choose resources appropriately and navigate the landscape to reach Oregon safely.

These examples showcase how gaming has been designed or adapted into educational applications with varying success. However, games like *Papers, Please* and *Fallout: New Vegas* present different challenges; both require significant time investment to experience meaningfully, making direct classroom integration impractical. Where *Minecraft* and *The Oregon Trail* offer contained sessions with clear learning objectives, narrative-driven games require sustained engagement for Aarseth's ergodic intimacy to develop. Assigning such games as homework, however, could allow students to engage at their own pace, letting the didactic experience emerge through personal exploration rather than guided instruction. This approach offers something traditional texts cannot: embodied understanding through participation rather than observation. A student reading about authoritarianism experiences it intellectually. However, playing *Papers, Please* lets them experience complicity directly.

Finally, this paper does not suggest that video games are a superior learning tool. As established, learning is subjective and not every student learns the same way. For some students, they might not achieve intimacy with the cybertext, but for those who do, it can create an active understanding of the subject matter, allowing video games to offer a more nuanced approach to learning.

SF and Estrangement

The SF element can be argued to have been layered onto the game studies framework. Bogost established that video games possess rhetorical power through procedural rhetoric, and therefore, by extension, a didactic angle. There are plenty of games that are not inherently SF that have a didactic lesson. However, SF applies a critical lens for examining real-world structures. Minecraft, Oregon Trail and Overcooked are examples of games that provide crucial yet basic lessons on geometry, economics and teamwork, but do not apply a deeper or thought-provoking didactic lesson. The paper's chosen games: *Papers, Please*, *Fallout: New Vegas* and *Cyberpunk 2077* are enriched by the SF conventions, allowing for a deeper analytical approach. These games feature many important themes: the dangers of capitalism and authoritarianism, the erosion of the individual and the importance of agency and choice. These themes are a few examples of the procedural arguments and didactic features found within the selected games, brought to life by the medium and enhanced by SF.

However, this does not mean video games require SF to achieve deeper analytical perspectives. Similar analysis could be conducted on non-SF games; however, that falls outside the scope of this paper. What SF provides is estrangement, a critical distance that allows the player to examine real-world structures without the themes and procedural argument provoking a

defensive response from the player. Arstotzka is not Russia or the Soviet Union; Night City is not Los Angeles, and the Mojave Wasteland and New Vegas are not its real-life counterparts. This distance enables open engagement with uncomfortable themes that, through SF, can be more easily explored. As the three case studies have shown, this potential is not automatic; it depends on the alignment between gameplay, narrative and the SF conventions. With the discussion complete, the paper now concludes with its findings and suggestions for future research.

Conclusion

The paper has attempted to answer the question: How do science fiction video games create unique critical learning experiences by integrating SF's speculative critique and gaming's interactive narrative structure? This was explored through three case studies, showcasing how video games extend beyond entertainment. This concept has already been established by Aarseth and Bogost's theories on ergodic literature and procedural rhetoric. However, this paper argues that video games also hold didactic capacity, the ability to teach players both basic and intricate lessons, depending on the game’s design.

Papers, Please produces a specific argument and didactic lesson through restrictive gameplay, designed to create a coherent and focused experience. *Fallout: New Vegas* offers broader lessons, using its open-world sandbox to create a didactic framework where the player’s ergodic path becomes the lesson, allowing for varied outcomes. Finally, the paper showcased that this didactic potential can exist in video games, but can be diluted or disrupted depending on how gameplay and narrative complement each other.

The paper has attempted to contribute a framework for exploring didactic potential across video game genres. Marshall McLuhan's insight has been important, laying the foundation for the paper and highlighting the importance of the medium as a core theory for meaning-making in literature. Espen Aarseth's ergodic literature highlights the importance of interactivity in cybertext and video games. Ian Bogost's procedural rhetoric reveals how game systems can reflect reality. Together, these theories demonstrate how video games transform passive learning into active learning through the ergodic path. The SF elements strengthen this framework, thanks to the contributions of Darko Suvin, Robert Scholes and Adam Roberts. Without cognitive estrangement and the novum, the didactic lesson would be diluted or become more generic. Each of the thesis's chosen games (*Papers, Please*, *Fallout: New Vegas* and *Cyberpunk 2077*) comments on society, structures of ideology and the importance of agency and choice, and these lessons are absorbed through the simple act of playing the video game.

The thesis's limitations include its narrow case range. The three chosen games share significant similarities and do not cover a wider range of video game genres. As mentioned in the discussion, examining different genres could have strengthened the argument. For example, social games could showcase social norms and rules, applying a quantitative case study, observing a group of people engaging in these activities. One example is *Push the Button* from J*ackbox Party Pack* (Jackbox Games), a social deduction game where most players are assigned the role of human, while others are secretly aliens. Humans must identify and eject the aliens; aliens must blend in.

The game presents prompts where aliens receive alternative versions that clash with "normal" human responses, singling them out (fig. 25). Through this simple premise, the game establishes

an argument about what society considers normative versus strange, a didactic lesson on social conformity delivered through play. However, this was beyond the scope of this paper. Future research could apply the thesis's didactic framework (McLuhan, Aarseth and Bogost) to such genres, pairing it with social theories to explore new dimensions of video games' didactic potential.

Fig. 25. A prompt and answers in *Push the Button*.

This thesis has demonstrated that video games possess significant didactic potential. The medium has evolved beyond entertainment into a space capable of critique and instruction. Therefore, it is important to examine video games through this lens, recognizing their capacity to teach while they entertain. Players consume stories through interactivity, enacting the same lessons they read or absorb through other forms of media, and through this enactment, they learn.

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