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Article

Entropy as a Transitional In-Game Variable

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Abstract: The aim of this research is to discover the bond of entropy and the experience of video game immersion, using an Interpretative Phenomenological Analysis (IPA) to interpret the immersive experiences of players and how this bond of entropy and immersion could be transferred on other immersive technologies. The experiment was conducted on a selection of low-entropy scenes in three video games belonging to the genre of interactive drama. Six players were selected as the sample group for this research, based on their playthrough experiences of the games Heavy Rain (2010), Until Dawn (2015) and Dark Pictures Anthology: Man of Medan (2019) on the PlayStation platform. By monitoring the levels of entropy and immersion during their playthroughs, this research explores the potential of transferring immersion through the use of entropy from digital games to other immersive technologies. According to the research highlights and through data interpretation, entropy is found to be immensely influential upon achieving and maintaining narrative, physical and emotional immersion, and its effect could be further applied to other immersive technologies sharing a common ground with digital games, which features are further examined in finer detail in the current research.

Keywords: entropy; immersion; interactive drama; in-game tension

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1. Introduction

As experienced in physics, entropy describes the change of state within a closed system, which subsequently leads to game cases of asymmetry, disorganization, disorder or randomness. Under the scope of video game analysis and gameplay experience, entropy is captured during the same frames of gameplay as the player's experience of tension [1]. Specifically, tension is frequently reported as an influential factor of player's gameplay experience of enjoyment [2] or suspense [3], while it is also associated with game engagement [1] in relevance with immersion, presence, flow and absorption [4]. The relationship of entropy and energy in games is inversely proportional; thus, in low-entropy scenes, the amount of concentrated energy within the game system is high, as opposed to high-entropy scenes, where the energy is evenly distributed within the game system. In states of low-entropy systems, high levels of internal energy are concentrated, leading to explosive states exploiting the use of narration [5]. Conversely, in high-entropy situations, the energy within a system is spread out, and thus, objects within experience a more controllable narrative transition. Some examples of low-entropy states are the moments when the characters' progress of the game is threatened due to the irreversibility of player's choices or skillful operation. Entropy is liable to the number of irreversible player choices, as presented in the form of dialog options, narrative branching decisions, paths and object collection, among others. The encountered options reflect the criticality of player's actions and their effects on the game narrative. Entropy is present throughout the gameplay, but its effects shine specifically during its lowest values. Low amounts of entropy result into meaningful choices from any perspective (options, narrative dialog, strategy, etc.), constituting an intriguing research factor. Conversely, the high-entropy scenes are not able to alter the course of the

game narrative; hence, high-entropy states provide minimal data for collection, review and interpretation to reach to conclusions regarding impactful insights of how entropy as concentrated energy affects the gameplay.

Entropy control allows maintaining and prolonging the player's planning; the use of entropy as a tool to enhance tension in games is reflected by the speed of their expected responses and attention [6]. The importance of correlating entropy as a factor capable of generating or strengthening any type of immersion in games will result in the identification of entropy as a prosperous tool for reinforcing the efficiency of other immersive technologies.

The contribution of this research is to propose an original correlation to monitor entropy as a transitional variable describing energy within a game system and associate it with tension during gameplay experiences, aiming at producing novel connections of how entropy control and specifically low-entropy scenes are capable of achieving narrative, physical and emotional immersion. The main elements of focus are the turning points presented in the game genre of interactive drama. Storylines in interactive dramas are not predetermined and the designers' purpose is to create situations in which players must act to resolve the narrative obstacles. The selection of different in-game choices and the branching options create a unique storyline based on the interaction of players with the game world. For the present paper, three games have been selected, which are available on the PlayStation console and belong to the genre of interactive drama; *Heavy Rain* (2010), *Until Dawn* (2015) and *Dark Pictures Anthology: Man of Medan* (2019). The selected scenes reflect the significance of branching options where the characters survivability is affected, resulting in "narrative options" relevant with a character's "game over". The research purpose after data collection and interpretation is to evaluate if and to what extent entropy is able to affect narrative, physical and emotional immersion in games and to explore its application as an influential factor of immersion efficiency on other immersive technologies.

2. Materials and Methods

For the purposes of this paper, among the variety of types of immersion proposed by many academics throughout the years, three core categories have been selected, which are elucidated below. Ryan R. and Rigby S., in their Player Experience of Need Satisfaction (PENS) [7] model, referred to a three-dimensional approach to narrative, physical and emotional immersion.

Narrative immersion constitutes the diegetic absorption of an "engaging" story, which is illustrated through dense narrative construction and the perception of make-believe and compels players to change their frame of reference. Ermi L. and Mäyrä F. classified this as imaginative immersion, "the dimension of game experience in which one becomes absorbed with the stories and the world, or begins to feel for or identify with a game character" [8]. The area of imagination, character empathy and fantasy delight of the game is what players perceive as the state of narrative immersion.

Physical immersion, on the other hand, occurs when the virtual world feels compelling as a field for actions [9]. Challenge-based immersion, is conceived as subpart of physical immersion and is described as "the balanced relation between level of challenge and player's abilities" [8] that players experience in cognitive demanding environments associated with the understanding of in-game challenges [10] and the transfer of knowledge [11]. Game difficulty is an influential factor of physical immersion, resulting from the complexity of controls or procedures that demand from the player a skillful operation, or the requirement of highly impactful strategy organization to succeed in the game.

Emotional immersion occurs when players experience appropriate or authentic feelings given the events and context [9], which is achieved with various senses that engulf alternate stimuli and multiple sensory channels. Difficulty can also be important for emotional immersion; for instance, an emotional struggle between players' emotion and reason.

The description of challenged-based immersion is quite relevant to Csikszentmihalyi's theory of flow, which is an enjoyable state of intense mental focus experienced while we

engage in a challenging activity [12]. According to Csikszentmihalyi, the flow experience is an "autotelic state of consciousness, which people feel when they enjoy what they are doing, when they would not want to do anything else" [13]. In addition to the emotional and physical relation, the term of vividness is proposed to describe immersive media experiences. Vividness and interactivity are formed from "a system-generated world that affords interaction to its users", with the ability "to produce a sensory rich mediated environment" [14].

Trying to distinguish spatial immersion from spatial presence, Ryan M. L. [15] referred to the latter as a new dimension in the immersive virtual environment, constituting of the means of technology and not narrative, followed by the syllogism that immersive virtual environments are only a presentation context, whereas its narrative context is the diegetic space of the story that takes place within it. The concept of total immersion is also proposed by Ryan M. L. [15] as a commonly attempted state which encloses all the aforementioned types of immersion [14,16]. A highly impactful contribution on the subject of immersion is proposed by Salen and Zimmerman, opposing François Dominic Laramée's statement that "all forms of entertainment strive to create suspension of disbelief, a state in which the player's mind forgets that it is being subjected to entertainment and instead accepts what it perceives as reality" [17]. This is described as the immersive fallacy, which "is the idea that the pleasure of a media experience lies in its ability to sensually transport the participant into an illusory, simulated reality" [17]. According to Calleja, the commonality of misconceiving immersion as absorption is closely tied with underlying hypotheses which "are tied to a sense of presence in a virtual world inherent in the immersion-as-transportation metaphor" [18].

The selection of the interactive drama genre as a fit for the experiment is due to the criticality of irreversible choices that it provides. The use of entropy is highly associated with player's influence on controls, since they are responsible for exploring the narrative branching options that the plot provides.

2.1. Heavy Rain (I)

Heavy Rain is an interactive drama in which people land in extraordinary situations. The story explores the meaning of paternal love and a father's sacrifice. The spotlight shines on four different characters; the game shows their perspectives, contributing to the main story. It is a highly impactful story that pushes moral consideration, significance and "boundaries" of the subjective perception of "good" and "evil".

During the 50th chapter, named "*Killer's Place*", Madison has discovered the villain's identity and is locked in his hideout while there is a fire in the apartment. The player experiences what can be defined as a low-entropy moment in the story (Figure 1). In that moment, the player needs to immediately respond and focus on the game actions; otherwise, the character's survival is threatened. The constraints generated from the players' timed responses and focus are some of the defining entropy factors present in this scene [19,20]. In the course of the challenge, the player has to dodge certain objects using QTEs (Quick Time Event). In *Heavy Rain*, players experience a simplistic approach towards branching narrative options, since in order for a character to die, consecutive fails are required. Additionally, it is the only game among those selected where players can optimize the difficulty of the QTEs, at any point throughout the game narrative. Furthermore, the characters of the game are complete strangers; therefore, their relationships are built up from the ground, whereas in later games, the character's relationships generate an additional layer of sympathy and emotional investment.

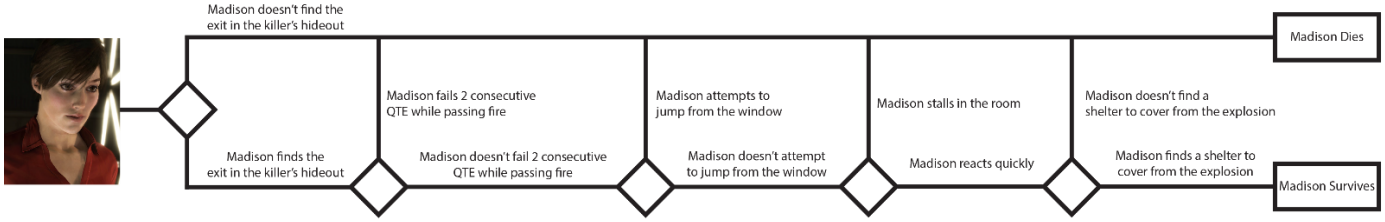

Figure 1. Overview of the branching options presented during the entropy scene in the 50th chapter of Heavy Rain.

2.2. Until Dawn (II)

Until Dawn has a horror-mystery themed narrative, in which a group of friends visit an isolated residence in the mountains, and due to a terrible accident, two of them go missing. In honor of their friends' memory, a year later, the group revisits the residence only to discover that the mystery which caused their friends' death has not been solved, leading to intrigue and accusations among the party. Eight characters are involved in the gameplay, showing their perspective while contributing to the solution of the mystery. With their lives at stake, the game involves many narrative outcomes as players attempt to solve the mystery and survive that sole night in the mountains.

In the 4th chapter of *Until Dawn*, Mike pursues the creature that has abducted his lover, Jessica. The player comes across of the first encountered low-entropy moment in the game, since Jessica's fate is at stake. Depicted below is the complexity of options that the game provides in order for Mike to save Jessica (Figure 2). Even though in the game code states "if Mike fails less than 1 QTE in the slow options, or 4 QTEs in the fast options", during the playthrough, players realized that this was not the case. The necessity of the game to judge a character's fate according to the player's initial choice seems to be an extremely noteworthy factor. The narrative challenge that a player faces is crucial, since if they choose to risk a shortcut as their starting choice (Figure 3), they get compensated even in the case of picking the slower options later on. On the contrary, if the player chooses the safe path as their first choice, the game outcome is stricter towards Jessica's survival. Moreover, the emotional bond created between the couple prior to this scene creates a close relation between life and death. Seconds ago, the player experiences the birth of a new love between Mike and Jessica, only to question its existence moments later. This dipole of Mike and Jessica's love engenders an additional layer of emotional investment, which involves a situation of mutual exclusive events, during which each character contributes separately to their emotional attachment.

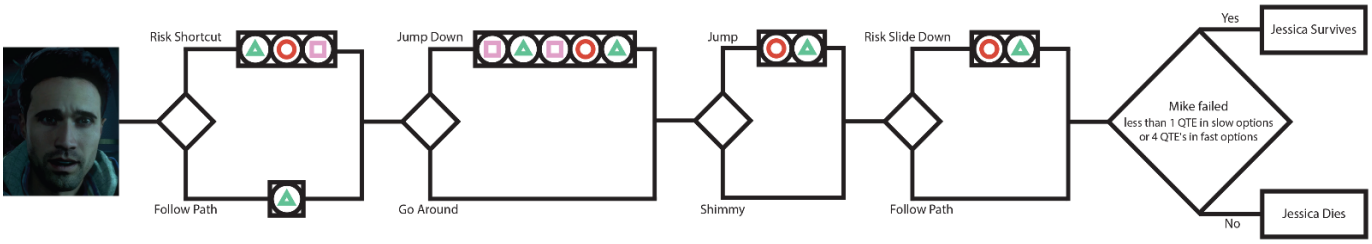

Figure 2. Overview of the branching options and QTE presented during the entropy scene in the 4th chapter of Until Dawn.

2.3. The Dark Pictures Anthology: Man of Medan (III)

The storyline of *The Dark Pictures Anthology: Man of Medan* consists of two temporal events. In the past, an American ship containing dangerous cargo gets lost in the sea. In the present, the five playable characters, while searching for a scuba diving spot, unwittingly create a rivalry with a group of fishermen. The conflict between the two parties is resolved when nature decides to force them into boarding the aforementioned ghost ship, on which the characters come in contact with supernatural creatures. While exploring, the players

need to unfold and solve the mystery revolving around the origin of the ghost ship in order to escape.

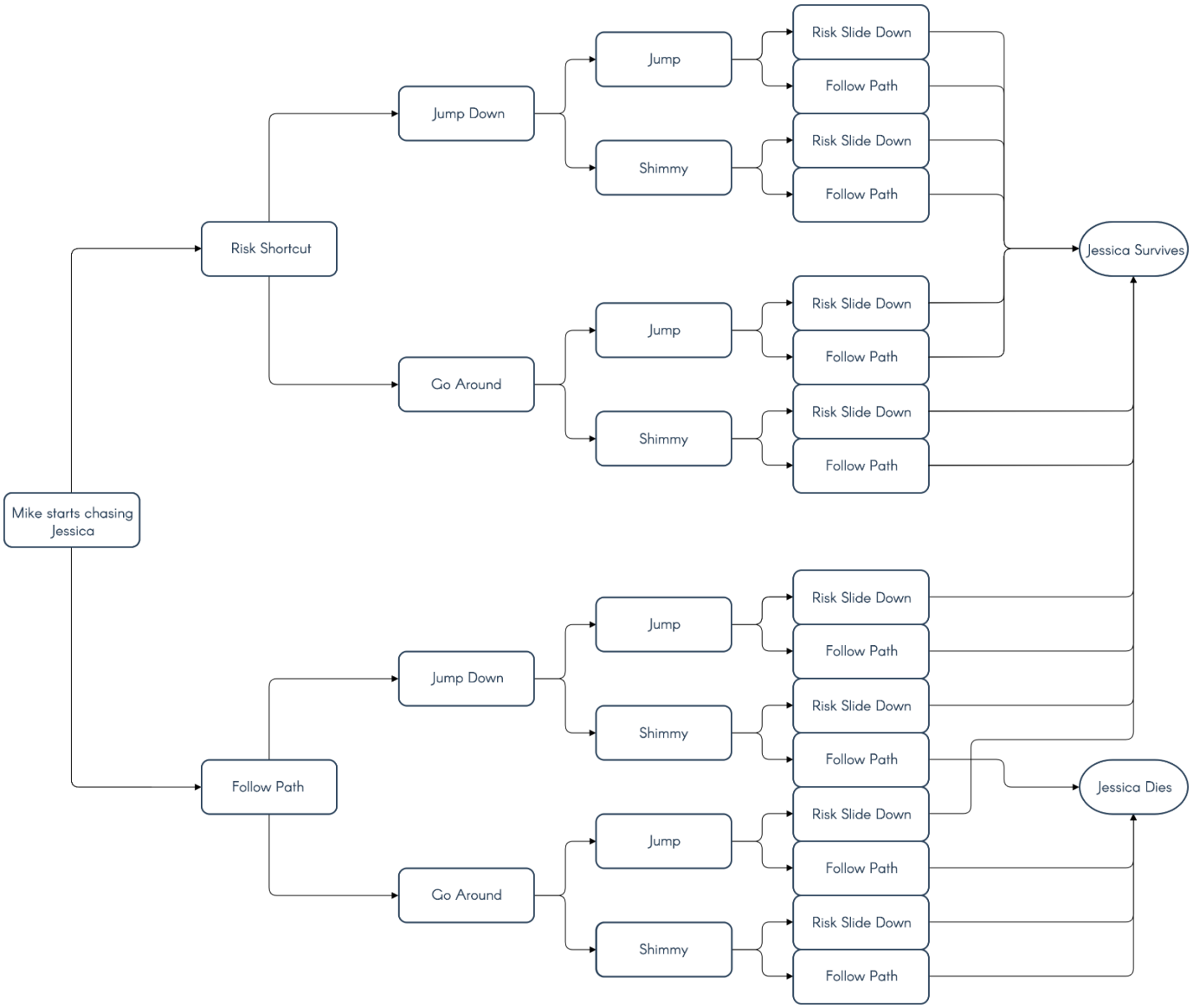

Figure 3. Flowchart of the branching options presented during the entropy scene in the 4th chapter of Until Dawn.

During the 19th chapter of *The Dark Pictures Anthology: Man of Medan* "*Glamor Girl*", Conrad explores the ghost ship, while experiencing supernatural visions. Lost in his panic, a pursuit occurs where Conrad attempts to avoid the creatures chasing him, passing on top of broken ship decks until he manages to reach an edge on the top of the ship, only to realize that he had confused the creature stalking him with one of his friends. In this moment of entropy, the characters do not have a deeper relationship, since in both cases, the friends that chase Conrad are just other members of the crew that Conrad first encountered at the start of their journey. The exciting part in Conrad's moment is that the character's survival depends on multiple in-game factors (Figure 4). His ship run constitutes of both "harmless visions" for which the outcome is irrelevant for his survival, as well as actual dangers that are intertwined almost alternately; these sequential challenges form peaks and valleys in the interest curve of the scene. Due to the fact that *The Dark Pictures Anthology: Man of Medan* is the most recent released interactive drama amongst the selected, it encompasses a plethora of challenges, such as QTEs, narrative choices (i.e., run/hide, jump/confront)

and a heartbeat QTE sequence, which is interpreted as the character's ability to stay calm during the challenge. Although the energy of this entropy scene does not derive from the character's attachment, the player has more narrative options to explore and the character's survivability is a personal matter of success or failure.

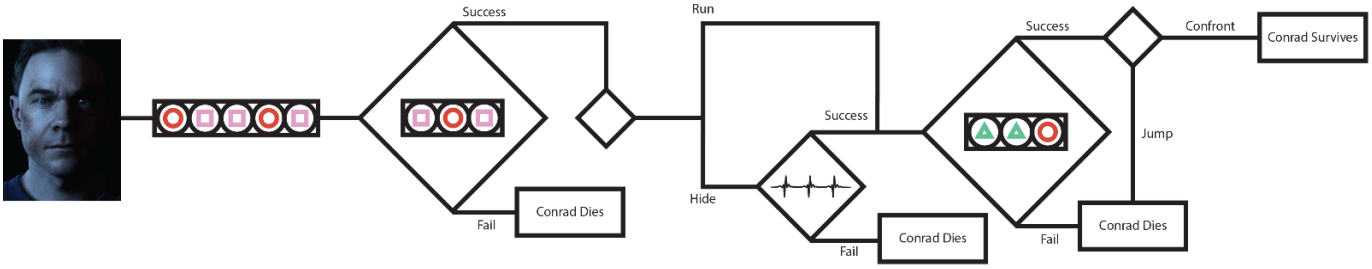

Figure 4. Overview of the branching options and QTE presented during the entropy scene in the 19th chapter of The Dark Pictures Anthology: Man of Medan.

3. Results

The focus of this research are the experiences of the player base of the genre of interactive drama, and their perception of entropy and immersion. The participants were selected from a homogenous group of players of the three selected games and participants #3, #4, #5 and #6 were suggested from the initial participants #1 and #2. [21]. For the purposes of the player selection of this study, certain limitations were applied. In order to be included in the interviewing process, players had to complete the main story of the games and accept to replay the selected scenes within the interviewing month. The research focuses on players' experiences and their understanding on the case of entropy and immersion. The proposed questions for an IPA revolve around players' involvement and orientation in the game world and their perception regarding the relationship of entropy and immersion. A primary task is to analyze the players' understanding of their own experiences, through the use of exploratory questions, and provide a detailed examination of their lived experience. The sample size of the interview was narrowed down to six participants in order to achieve a greater quality of collected data [22,23]. The data collection process was a semi-structured exploratory interviewing method, avoiding any kind of explanatory, fixed answer or "closed" types of questions, always stating that there are no "correct" or "wrong" answers for this type of interview [24].

The interviews of the six participants brought forward various interpretations regarding the experience of entropy, immersion and their relationship with other in-game factors. Within the following subsections are the findings of the various questions asked during the interview.

3.1. What Did You Find Yourself Doing/Feeling or Experiencing While You Were Playing These Games?

The participants #1, #2 and #5 stated that the primary emotion they were experiencing was anxiety. A haunting feeling that they were expected, in a societal context, to succeed in saving the playable characters, which deepened their relationship with immersion in these moments. Participant #1 mentioned that during these moments of chasing " . . . the game had my full concentration, especially while I was running, if anything would happen, I would not have listened". During her interview, it was notable that she was unable to recall the exact figure that was actually chasing her characters most of the time. The same happened with participant #6, who mentioned "I was shocked by the fact he was the villain, that I had completely forgotten the fire extinguisher on his desk". This shows that he failed to remember or had not even registered crucial information regarding the game narration due to the emergent issue of facing his character's probable "deaths scene".

3.2. From Your Perspective, Which Was the Greatest Challenge of These Games?

All of the participants, except from #2, expressed that the primary challenge of the games was their fear of their characters dying. Although the second participant did not express fear as an encountered emotion during his playthroughs, he expressed that he felt the presence of tension and he stated that during these scenes "you know that the characters will probably die", also mentioning that he usually replays such games two or three times to see the possible alternate endings of each chapter. The emotion of fear was encountered through all of the interviews (#1, #3, #4, #5, #6), most of them reporting that what kept them involved was the irreversible actions that their characters would do during their playthroughs. Specifically, participant #1 mentioned that her biggest challenge was to maintain her calmness and how fear affected her visual contact with the surrounding space.

3.3. Could You Tell If You Experienced Any Factor That Drew You into These Games?

For participants #2 and #3, the narrative of the game was such a factor. Quoting participant #2: "for me it's all about the storytelling of the game". He mentioned many times that if a story appeals to him, he will be replaying the game to explore all the possible outcomes. Participant #3 also stated that the factor which kept him invested during his playthrough was narrative precision, "I like it when a game has a consistency in its narrative and there are no points that completely break the setting". Continued by the statement that he also likes to connect the narrative of the game with actual facts of the everyday life, "*Man of Medan* is a great example, the story is actually driven from real-time events". Based on the comments of participants #2 and #3, the research concluded that they achieved narrative immersion during their playthroughs.

3.4. Based on Your Gameplay Experience, How Does Entropy Affect Other Immersive Structures?

All the participants stated that only if other structures carry the same traits as video games, entropy could affect immersion. While elaborating on their answers, participant #4 mentioned "I think that a game consists of the relationship of challenge and story: if there is no initial interest in any of them, I would not have played it in the beginning", and continued with "well, a game is polished, that's why its appealing, I would say that the same would happen with other structures". Participants #1 and #3 were more general in their answers. The first participant mentioned that " . . . even without characters, someone could make a scene with a lot of tension, with music, with effects, with the lighting". Quoting participant #3, " . . . as long as any other structure keeps me engaged, I see no reason as to why entropy cannot affect immersion in other structures".

4. Discussion

Despite the fact that players sincerely enjoy game indulgence, a trust relation and time investment is a prerequisite to achieve in-game immersion. Players experience what is described as the Paradox of Painful Art [25], during which people do not seek situations that arouse painful emotions; either people have painful emotions in reaction to art or people seek out art knowing that it will evoke painful emotions. As Juul J. commented "humans are not simply pain-avoiding, pleasure-seeking creatures" [26]; the distinction between the terms of pleasure and satisfaction is the differentiating element between horror and tragedy [26]. People experience unpleasant emotions while reacting to art, but the masterpiece itself completely eradicates any negative emotions created due to its aesthetic and sensual ability.

The aesthetic style that dominates the genre consists of a dark theme with depictions of shady sceneries, mostly occupied by hazardous conditions, such as fog, rain, humidity, glacier, hail, dust, smoke or darkness. The environment of the games shows constant variation based on in-game events and matches according to generated feelings of discomfort in the player.

Some games utilize a "game over" status, also known as "permadeath". This is the irreversible state that players experience when losing the option to replay with the same

character in the game, making that character unplayable. Permadeath is described as something that effectively separates the player and avatar; an interesting consequence of this is the "porting over" of the authentic desperation of life's struggle. The permadeath restriction forces a player to adapt to overcome the biggest challenges one will ever confront in a game, or in reality: their own fickleness, foolishness, cowardice and frailty [27].

In the same manner, constant satisfactory feedback is something that should be avoided, in order to attain narrative tension on the peaks of the interest curve; hence, players should be prepared for the upcoming climax of events, as otherwise, there is a high risk of breaking immersion. Through the gameplay of interactive dramas, players could detect resemblances on the use of controls and interfaces between other games. With the use of mimetic interfaces, "games are easier to learn . . . and it adds new types of fun-easier, because players can use their preconceptions" [28]. Keeping the player's mind free of complicated control systems, but most notably retaining a consistency of controls, allows player immersion and cultivates a common practice of control functioning throughout the game.

In *Heavy Rain*, when players face a multiple action challenge during which actions unravel one after another, the player has to hold the correct button for the whole set of actions. Furthermore, when challenges involve constant effort, such as climbing, or pulling someone, a smash the button control rule is always applied. Lastly, *Heavy Rain* attempts to use mimetic control interfaces when characters need to push right, left, up or down with the use of the controller's motion sensor. Although the use of mimetic interfaces helps into achieving immersion, the designers' attempt to perfectly match gameplay with reality might be harmful towards the gameplay experience. Imitating reality does not always translate into fun during the game. Players have preconceived ideas about how an experience should feel like, and altering such experiences so they come in total contact with the real world might break immersion from a complexity or tedious point of view. In the newer games, such as *Until Dawn* and *Man of Medan*, the consistency of controls derives from the repetition of buttons for actions that the focus is located on the same task. For instance, for actions that involve jumping or focusing on objects on top of surfaces (e.g., a table or the floor), the X button is used, while for actions where the player's focus in on the top of the screen, the Δ button is used.

Both games implement dynamics around tranquility, during which the player has to either keep the controller completely still, or has to press the X button according to a heartbeat diagram. A great relevance in the most recent games is that there is no rewind feature. In *Heavy Rain,* after a chapter is finished, the player is able to replay it if they did not like the outcome of the story, whereas *Until Dawn* and *Man of Medan* do not allow the player to replay the chapter, unless the whole game run is finished. This constraint of the physical world, i.e., that player's actions are irreversible, deepens player's immersion. The tolerance of the game in response to player's actions strengthens its immersive grasp, while it "demands" the player's focus. Since irreversibility is featured in the game, in case a player loosens their attention, they would have to either face the consequences of their actions, or repeat the whole game run from scratch. The player's choices are determined by two inverse proportional variables, in-game attention and time investment in the game. Furthermore, in relation with narrative immersion, it is ascertained those games also project a narrative vicinity. In *Heavy Rain,* characters visit in-game locations in a cohesive way, in addition to introducing places and characters in an understandable manner, such as visiting your doctor as a patient and then playing as a police officer interrogating the character's doctor for clues. The narrative vicinity created allows the player first to acquaint themselves with the knowledge rather than rushing to conclusions, which ultimately creates leaping steps within the narrative. These narrative concepts are tied up in game constraints and the expressivity of the target creative domain (e.g., color palette) [29]. On the subject of physical immersion, spatial vicinity is encountered in places where clues are found and how close these locations are to one another signifies how compelling the game world is. Even though players are unable to traverse through the actual game space, since their path

is predetermined by the narrative of the game, spatial vicinity creates a transparent layer of cogency. Being able to see a place which is at first unavailable to the current narrative space, but then becomes available to explore as the plot unfolds, such as a Sanatorium or the deck of a ship, is an example of the produced spatial vicinity. Opposing the low-entropy moments commented on in the previous section, games present high-entropy moments as well. The aftermath of high-entropy moments does not contribute to the narrative denouement and are usually presented as "empty" challenges in matter of contextual knowledge. Such moments are generally depicted as dreams, flashback, memories, etc., during which the illustrated challenge is either educative towards familiarizing players with the upcoming challenges, or have no impact on the narrative of the game. Empty challenges are implemented in the game's narrative to generate peaks and valleys on the interest curve, while methodically contributing to the player's progression, training and the rise of the suspense. A common figure among these games is the chaotic attractor, which is often a shady character designed to attract attention with their mysterious behavior and rise suspicion due to their hidden agenda. Among the selected games, that chaotic attractor is commonly encountered as an abusive authoritarian cop, a mysterious hunter or a supernatural creature that threatens other character's presence. Such characters are frequently presented to disorientate player's focus from the actual villain and generate a blur image of the villain's motives.

The correlation of entropy and tension denotes an inversely proportional ratio of depiction. The game constraints force the tension curve to stand to its peak, until the tension curve exhibits a denouement [29,30]. While entropy lowers within a system, the concentration of energy upsurges, resulting in increased tension. The lower the entropy, the higher the amount of concentrated energy, thus creating an energy burst which requires a player's response as a counterbalance action. The player's required ergodic effort increases in-game tension, with immediate effects on player's immersion. As Aarseth mentions, "the successful ergodic work of art maintains tension and excitement while providing a path for discovery" [31]. This highlights the argument that entropy, ergodic effort and tension are closely correlated with deepening immersion with the use of player's attention as a response to irreversible action during the narrative of the game. Although challenge and immersion are closely related, a significant challenge surge does not imply an equal increase in immersion. The general relation between challenge and immersion lies in a more personified experience, addressed to each player separately. In the same manner as flow [32], players with a higher skill ceiling might respond to easier challenges with boredom, whereas a less skillful player might get denied the immersive experience due to the high skill requirements. Entropy is a measurement of complexity and uncertainty within a system; it could be the amount or quality of given information in a narrative or the emotional or physical context. Integrating complex inputs and decoding them into processed arguments is an internal procedure during which players modify entropy into attention. A vaster understanding towards entropy meanings is allowed through the perception of time. In *Heavy Rain,* during the selected scene, entropy functions as a time catalyst; the player seeks a hiding spot to protect their character from damage. While players attempt to find a safe place, a time meter is provided, informing the time left. In case the player makes a wrong choice, time continues to pass, allowing the player to reconsider their choice, whereas if the player chooses a spot that could actually protect them from damage, the time meter stops immediately, which deprives a player second guessing their choice.

5. Conclusions

The purpose of this paper is to monitor the effects of entropy on the different types of immersion in games and explore the use of entropy as a factor affecting the efficiency of immersion on other immersive technologies. Through an Interpretative Phenomenological Analysis (IPA) based on the interviews with six participants, the players shared their experiences of entropy and its effect on different types immersion in games. From the

interviewing process, the players' mentioned the experience of fear, tension and anxiety as emotions highly correlated with in-game immersion. Specifically, participants #2 and #3 achieved narrative immersion during their playthroughs, while participants #1, #3 and #4 expressed their experience of challenge-based immersion. The most commonly encountered type achieved nearly by all the players (#1, #3, #4, #5, #6) was emotional immersion, as players were highly attached to their characters' survivability. Overall, the interview highlights led to the conclusion that entropy could be transferred to other immersive technologies, as long as the immersive technology shares the aforementioned features presented in detail in the discussion with digital games as a medium.

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Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: https://drive.google.com/drive/folders/1JuR-yOMDqFkutB_cseLTk62OxOQVs4aJ?usp=sharing (accessed on 20 April 2022).

Conflicts of Interest: The authors declare no conflict of interest.

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