

Narrative Game Mechanics

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Abstract. This paper explores the notion of narrative game mechanics by apposing theories from the field of cognitive narratology with design theories on game mechanics. The paper aims to disclose how narrative game mechanics invite game agents, including the player, to perform actions that support the construction of engaging stories and fictional worlds in the embodied mind of the player. The theoretical argument is supported by three case studies. The paper discusses examples of games that employ mechanics and rules to create engaging story events, focusing on: building tension through spatial conflict, evoking empathy through characterization and creating moral dilemmas through player choices.

Keywords: Interactive narrative design · Narrative game design · Environmental storytelling · Game analysis · Design research · Design education

1 Introduction

In my experience with educating narrative game designers, I have noticed that not all designers are aware that game mechanics are one of the most powerful narrative devices they have at their disposal. Rather than exploring what kind of mechanics might suit the narrative experience they want to build, they often start a project with a preset of mechanics, borrowed from popular genres. They tend to build the narrative around these “proven” mechanics, using other narrative devices, like environmental storytelling, cutscenes or dialogues for their storytelling. By choosing these familiar mechanics at the start of a project, designers deprive themselves of fully exploring what kind of narratives experiences they can create with games, simply because these existing mechanics only allow for particular kind of story events to unfold. This paper aims to explore the notion of narrative game mechanics and tries to explain how narrative game mechanics can be effectively employed in narrative game design.

2 Narrative Game Mechanics

What are narrative game mechanics? For those familiar with the so-called ludology versus narratology debate in game studies [1, 2], the notion of narrative game mechanics brings to mind some fiercely debated questions. Could games tell stories, and could the phenomena of narrative and games coexist in one medium? Without delving too deep into the debate, one insightful remark came from Marie-Laure Ryan, who proposed to

be clear about what kind of definitions underlie certain viewpoints. Understanding games in terms of narrative becomes problematic only when holding on to a traditional definition of narrative, grounded in classical narratology [3: p. 184]. According to Ryan, classical narratology understands narrative essentially as an act of recounting, that is, ‘telling somebody else that something happened’ [4: p. 13]. From a classical viewpoint, narrative presupposes a narrator (or narrating instance) telling a story—a fixed sequence of past events—to a narratee. Narrative is the semantic structure within a media text that represents—that encodes—this particular sequence of events [3: p. 184, 5: p. 25–26]. Since games, by virtue of their procedural affordances, are able to produce dynamic sequences of events, real-time, using the input of the narratee, the classical definition of narrative as recounting (i.e. story-telling) becomes problematic or even inapplicable. In short, games do not seem to recount past events in the present [6, 7].

Even though the classical definition of narrative does not seem applicable to the analysis of games, it would be false to conclude that certain games cannot be understood in terms of narrative. Rather than using the classical definition of narrative, Ryan proposes another understanding of narrative; one that stems from the cognitive sciences. According to Ryan, following cognitive narratologists like Herman [8] and Bordwell [9], stories do not essentially reside within the narrative text, but reside within the human mind as a mental construct: ‘narrative is a mental image—a cognitive construct—built by the interpreter as a response to the text [...] But it does not take a representation proposed as narrative to trigger the cognitive construct that constitutes narrativity’ [4: p. 9–10]. Even when a media text does not represent a story, one can still create stories mentally in response to this text. Similarly, even when the text does not represent a fixed sequence of events, communicated by a narrator (or narrating instance), our mind is still able to construct such a sequence, connecting events meaningfully to each other. In short, stories can be constructed in the mind of the user in response to a media text even when the text does not intend to tell a (predefined) story.

Moreover, these mental stories are not created in retrospect after the experience; they are not constructed in a moment of retelling, but are created real-time in the experiential moment itself [10]. While the player engages real-time with a game, (s)he is continuously constructing stories mentally, as cognitive frames, necessary for understanding past and present actions and plotting future actions. Also, these stories are not simply cognitive constructs in the sense of stored rational information, but are also affective constructs of visceral information [11]. The mental story includes both our intellectual understanding of a situation, for example understanding that John loves Marie, as well as our affective sensation of such a situation, for example seeing how John looks in devotion at Marie. In short, mental stories are created when our embodied minds (or mindful bodies), in an effort to make sense of the surrounding world, process rational and visceral information, deriving from an interaction with this surrounding world.

By understanding stories as mental constructs, it becomes possible to expand the applicability of the term narrative. Narrative does no longer only refer to the expressive act of retelling events of the past, but also to the expressive act of creating events in the present. In both instances, a story is “instantiated”, since the narratee is able to construct a mental story in response to the depicted events. It does no longer matter to what extent

these events, and their causal relations, are predefined in the narrative text, nor does it matter if these events experientially belong to a here-and-now or a there-and-then [6].

The cognitive approach to narrative suits the analysis of games and other forms of interactive digital narrative particularly well [12]. One of the merits of games is their ability to create events real-time, in response to the input of the player. Games featuring fictional worlds, inhabited by characters, can now be described in terms of narrative, even though their storylines are not or only partly predefined.¹ Moreover, not only the devices that are commonly associated with narrative expression in games, such as cutscenes, scripts and dialogues, can be theorized as narrative devices, but also the procedural devices that are responsible for creating events real-time, like game mechanics and rules, since the player's engagement with these devices can also trigger the construction of stories in the embodied mind of the player.

2.1 Mechanics as Narrative Device

Even though game mechanics can be understood as a narrative device, the notion of narrative game mechanics has not been explored thoroughly by industry or academia. There does not exist a broad awareness that the practice of narrative game design includes the design of game mechanics. Some preliminary work on the topic can be found on leading industry platforms, e.g. Gamasutra [15]. Likewise, in academia, the narrative function of game mechanics is acknowledged [16], but not yet fully theorized. When the dust of the ludology versus narratology debate settled, another notion emerged to the front: environmental storytelling, or alternatively, narrative architecture [17, 18]. Environmental storytelling is indeed one of the most important narrative devices for games, particularly those games that rely heavily on the player's traversal of space. Recent years have seen many games with strong environmental storytelling (e.g. *The Stanley Parable* [19], *Gone Home* [20], *Everybody's Gone to the Rapture* [21] and *Firewatch* [22]). In contrast to cutscenes or scripts, environmental storytelling abides player interaction. For example, when a player moves through a world, the environment can be used to inform the player about setting, characters and conflict. However, game mechanics, more than any other device, determine what the player can and cannot do within the environment, and this, more than anything else, determines what kind of stories the player will experience. Thus, it can be worthwhile to further delve into the notion of narrative game mechanics, as game mechanics can be an important addition to the designer's creative palette for making engaging narrative experiences. To grasp a better understanding of narrative game mechanics, this paper will delve into theories on game mechanics first.

¹ This paper understands "narrative games" as games with characters that inhabit a world and that undertake actions to reach certain goals, following established definitions of story from traditional narratology [13: p. 91] and cognitive narratology [14: p. 347].

2.2 Game Mechanics

There does not exist one generally accepted definition of game mechanics. In the industry as well as in academia, different ideas and approaches coexist. This paper will construct the notion of narrative game mechanics from the ideas of Sicart [23] and Järvinen [24]. Their contributions are helpful for the purpose of this paper, since they focus on the formal analysis of game design. They also focus on the user, including the notion of player agency in their definitions. Järvinen defines mechanics as: ‘means to guide the player into particular behaviour by constraining the space of possible plans to attain goals’ [24: p. 254]. Sicart proposes a similar definition: ‘game mechanics are methods [behaviors] invoked by agents, designed for interaction with the game state’ [23]. Both definitions emphasize the interrelationship between mechanics and player behavior. Mechanics influence (but not determine) the actions of the player. Unlike Järvinen, Sicart emphasizes that mechanics not only describe the actions available to players: ‘Game mechanics can be invoked by any agent, be that human or part of the computer system. For instance, AI agents also have a number of methods available to interact with the gameworld’ [23]. Both Järvinen and Sicart distinguish mechanics from rules. Following Järvinen, Sicart writes: ‘Game mechanics are concerned with the actual interaction with the game state, while rules provide the possibility space where that interaction is possible, regulating as well the transition between states’ [23]. In short, mechanics are ‘actions the player [and other agents] can take within the space of possibility created by the rules’ [23]. Not only the mechanics, but also the rules that constrain the player’s handling of these mechanics, structure the behavior of the player.

Following the approach of Järvinen and Sicart, game mechanics are best described by verbs, since they refer to the possible actions available to agents, such as players or NPC’s. A move-mechanic, then, could describe the possibility of the player-character to move through the game space. A shoot-mechanic, alternatively, could describe the possibility of the player to aim and fire a weapon.

Since rules provide the possibility space where actions can or cannot be performed, a compressed and somewhat simplified way to formulate the interrelationship between mechanics, rules and states is: The [name agent] can [action] by [instrument of input] and/but will [state change] if [condition of activation]. For example, in a board game, the relation between a shoot-mechanic and the rules related to it, might be formulated as follows: the player can aim and fire by rolling a die and will hit a target if the player rolls a six on a die. Similarly, in a digital 3D game it might be something like: the player-character can aim and fire a weapon by moving the right thumbstick and pushing the right shoulder button of the controller and will hit the target if the player presses the right shoulder button when the crosshair hovers over the target. Even though this simplified way of formulating the connection between mechanics, rules and states, does not do justice to the complexity of their dynamic interrelationship, it does help in gaining a first and basic insight in the workings of mechanics and rules in many games.

2.3 Agent Actions

As we have seen in the previous section, game mechanics and rules influence (but not determine) the behavior of agents. By establishing how agents can achieve a desired game state, they invite agents to undertake certain actions. The potential of game mechanics to influence the behavior of agents, like players or NPC's, is also central to the notion of narrative game mechanics. Like any narrative device, narrative game mechanics have the end purpose of creating engaging stories for players. By inviting players and NPC's to undertake certain actions, narrative game mechanics increase the chance that particular stories will unfold, since the nature and direction of a story depends (mainly) on the actions of its characters [5, 14].

With the cognitive understanding of narrative in mind, the following statement about narrative game mechanics can be made at this point: *Narrative game mechanics invite agents, including the player, to perform actions that support the construction of engaging stories and fictional worlds in the embodied mind of the player.*

As the statement indicates, narrative game mechanics support the instantiation of engaging mental stories. In practice, narrative game mechanics always work in tandem with other narrative devices, such as environmental storytelling, scripts, cutscenes, dialogues, monologues, voice-overs, character designs, audio and music designs, etcetera. Also, I am careful not to make a general assumption about what makes a story engaging for a user. This depends on many things, such as cultural background and culturally ingrained expectations. Still, many (Western) stories share some basic elements, such as an immersive world, believable characters and suspense building [25]. In the case studies below, attention will be given to some of the many elements that make stories engaging.

3 Case Studies

For the purpose of analytical focus, this section explores how mechanics express story events, rather than stories. Story events can be understood as the constituent, spatio-temporal units of a story, since stories, in a common definition, consist of sequences of story events [26: p. 16]. By choosing to focus on story events, this paper does not explore how separate story events relate to each other in the overall experience of the player. This question goes beyond the purpose of this paper, and could be a next step in theorizing the notion of narrative game mechanics. Such an investigation would have to delve into existing ideas concerning the development of storylines, and the ideology of emplotment, often witnessed in traditional theories and practices.

Firstly, I shall discuss *Left 4 Dead 2* [27] as an example of a game with a typical “game story”, that is, a story that can be encountered in many popular games, and focuses on the player's traversal of contested spaces [28]. The player enters an area where various obstacles, such as opponents, have to be overcome. Suspense is built through the protagonist's engagement with the surrounding, hostile environment. Stories like these have a strong presence in contemporary culture and stand in a long tradition of narratives dealing with human's primitive instinct for survival. Even though these stories are not profound in terms of their content, with regards to their form, they are worth our

analytical attention. As I will show, the designers of *Left 4 Dead 2* have found creative solutions for the challenge of expressing these popular stories through player interaction.

Secondly, I shall discuss *The Last of Us: Left Behind* [29] as an example of a game that not only focuses on the player's traversal of contested spaces, but invests in character building as well. I will explain how mechanics and rules are used for the purpose of characterization and the evocation of player empathy.

Finally, I shall discuss *Papers, Please* [30] as an example of a game that employs mechanics and rules to express complex moral dilemmas through player choices.

At this point, I would like to shortly address how I have analyzed the games, and how the object analysis relates to the theoretical inquiry. I have used the theoretical inquiry as a conceptual "lens", necessary for bringing into focus the most constituent elements of narrative game mechanics, namely: sets of available actions (to players and NPC's), usage contexts and restrictions, and state changes. By repeatedly playing the games, and structurally mapping patterns of input and output, I have been able to identify how their mechanics and rules create engaging story events.

However, this approach has its limitations. Game systems can instantiate a great number of stories, depending on the choices and preferences of specific players; a potential referred to as possible stories or protostories [12]. My analysis is based (mainly) on the stories that I have created, possibly decreasing the validity of my claims. The systems under scrutiny can instantiate more stories than the ones I have experienced. Also, game mechanics and rules are programmed into the game system, and cannot be directly perceived. Because game systems are "black boxes", concealing their internal structure and processes, it becomes uncertain if the object analysis has not overlooked essential mechanics and rules. To counter some of these concerns, I have used online comments of developers and other players to confirm my findings and support my analysis. I have also experimented with different play styles and strategies in an effort to avoid unidirectional playthroughs. Still, my claims in the upcoming sections could be further strengthened by additional object analyses, interviews with developers and quantitative or qualitative user tests.

3.1 Left 4 Dead 2

The theme of the game *Left 4 Dead 2* could be described best as survival by teamwork. The game centers on a group of four survivors in a post-apocalyptic world, infested by zombies. The player controls one of four survivors; the other survivors are either controlled by other players or by the computer's AI. When playing a level, the survivors enter an area with zombies of various types. The survivors need to move to a safe house at the other end of the level. Chances of survival lower drastically, when survivors do not stay together.

The theme of this game is well established in popular culture. Since George Romero's classic movie *Night of the Living Dead* (1968), we have seen many other movies, comics, books and games that revolve around a small group of individuals that struggle for survival in a zombie-infested world: from movies like *Return of the Living Dead* (Dan O'Bannon, 1985) and *Braindead* (Peter Jackson, 1992) to media franchises like *The Walking Dead* and *Resident Evil*. Stories in these media formats differ in detail.

Still, we do see many similarities when looking at the story events they portray. They often feature events such as: survivors being overwhelmed by increasing amounts of zombies, survivors getting separated from each other, survivors being picked off by zombies one at a time, survivors getting low on resources, etcetera. The developers of *Left 4 Dead 2* have tried to make the player experience similar story events. These events manifest themselves not by narrative devices such as cutscenes or scripted sequences, but mainly by the mechanics and rules. To disclose how the developers have succeeded in this, let us discuss one story event in detail, for example, an event where one survivor gets separated from the rest of the group. In line with the theme of the game, tension often heightens when one survivor becomes separated from the others, since being alone makes you vulnerable. As we will see, to increase the chance that a thrilling event like this will unfold, the game has to employ not one, but a broad set of mechanics and rules.

The core mechanics of the player are moving, picking-up items and attacking. One can move slow or fast, one can pick-up items, such as bandages, ammo and weapons and one can attack with melee or fire weapons of various shapes and sizes. These mechanics are constrained by familiar rules, such as: if you are attacked then you lose health points, or, if you fire a weapon then ammo is consumed. The dynamic interaction between these core mechanics and rules make some players decide to move away from the other survivors in certain situations. Items are scarce, and players will often find themselves in need of them. In order to get ammo, bandages, weapons or other items, a survivor could decide to leave the group. The level design is also important here. Items have been scattered around the area, not always in close vicinity to the main roads. Additionally, certain areas have low visibility, making it difficult for players to stay close to each other. Maze-like structures, such as hotels, cornfields, but also highways scattered with car wrecks, make it hard for the player to see further than a few feet ahead. Scarcely lit areas, or areas plagued by storm and rain, have a similar effect on the player's visibility. When players lose direct sight of each other, chances increase that (several) survivors get isolated from the rest of the group.

Another essential mechanic in the game is what I refer to as the incapacitate-mechanic. When a survivor has no health left, (s)he cannot move, and is forced to stay put. If the incapacitated survivor does not get help from another survivor within a certain duration of time, (s)he will die. This incapacitate-mechanic supports the instantiation of story events where survivors get isolated. When a survivor is incapacitated, the other survivors could leave him or her behind, and the survivor has no chance of catching up with the other survivors. Should another survivor decide to rescue the incapacitated survivor, (s)he will have to leave the rest of the group.

Besides the basic incapacitate-mechanic, the designers have devised some additional incapacitate-mechanics, related to so-called special infected. Special infected are dangerously mutated zombies with special abilities. Special infected incapacitate survivors in various ways, for example, they can instantly pin survivors down when coming into contact with them, or they can blind survivors. The special infected called The Smoker and The Charger are particular relevant here. The Smoker has an extremely long tongue. He uses his tongue to snatch and entangle one survivor from a large distance, dragging the survivor towards him. Similarly, The Charger runs into a survivor with great speed, grabbing and taking the survivor with him, until he comes to a halt by hitting

an object, like a solid wall, or until he has traversed a certain distance. The mechanics of *The Smoker* and *The Charger* seem to have been designed for the specific purpose of creating story events where one survivor gets separated from the group. Both mechanics make the agents perform actions that instantiate these events.

In the next section, I will discuss how mechanics can be used for the purpose of characterization and empathy building.

3.2 The Last of Us: Left Behind

Thematically, *The Last of Us: Left Behind* is similar to *Left 4 Dead 2*, since both games revolve around players having to survive in a zombie-infested environment. However, *Left Behind* also explores how the characters suffer emotionally from their post-apocalyptic surroundings. To be more precise, the player follows two adolescent girls who struggle to save their friendship in a hostile and unforgiving world. While some of the story events are quite similar to those in *Left 4 Dead 2*, namely those concerned with the traversal of occupied space, other story events are more focused on characterization and the player's empathic engagement with the two girls. These events seem to serve the purpose of portraying the characters in a believable fashion, and making the player care for the close friendship of the two girls.

The games also differ in terms of narrative structure. *Left 4 Dead 2* is an example of a game with an (primarily) emergent structure; what kind of story events occur (and when and where) is generally the result of the player's engagement with the mechanics. *Left Behind* is an example of a game with a (primarily) planned structure; the designers have largely determined in advance what kind of story events will occur (and when and where). The mechanics are used to make the player enact these pre-established story events, at specific moments in the game.

The core mechanics of *Left Behind* are similar to those of *Left 4 Dead 2*. The game has, amongst others, a move-mechanic, a pick-up-mechanic, a throw-mechanic and an attack-mechanic. In most cases, the player uses these core mechanics for survival in the various zombie-invested areas of the game. The player can move slow or fast, can pick-up items such as ammo, bandages and weapons, can throw objects to distract or stun opponents, and can eliminate opponents with fire arms or melee weapons. Like *Left 4 Dead 2*, these mechanics create story events with a focus on tension building through spatial conflict. For example, there are situations where the player has to carefully and silently navigate through rooms where zombies lumber. However, the designers of *Left Behind* have, rather resourcefully, used the same core mechanics to create another type of story event, namely, an event concerned with characterization.

The designers have managed to repurpose the existing mechanics for creating story events that portray the personalities of the two girls and their interrelationship. At some point in the game, the girls enter an abandoned mall. When stumbling upon two rusty cars, they think of a small challenge: each girl chooses a car and the first one to throw in all the windows wins. The loser needs to answer a question given by the winner. The player controls one of the girls, the protagonist Ellie. Commonly, the player uses items such as bricks or bottles to distract or stun opponents. Now, the player picks up the bricks to throw in the car windows and win this juvenile, playful

competition. By changing the context, the designers have succeeded in using the same set of core mechanics to make the player enact another type of story event. In this particular situation, the mechanics make the characters act in a believable and identifiable fashion; one could expect this behavior from two adolescent girls, hanging out together. In another level, we can witness a comparable re-contextualization of the core mechanics. The girls start a fight with water pistols. Instead of engaging with opponents, the shoot-mechanic, with minor adjustments, is used to create a story event where the two girls frantically chase each other through a shop, spraying water around, as if the world has ceased to be hostile and unforgiving.

In both examples, the mechanics showcase the personalities of the girls, and their close friendship. By cleverly re-using the core mechanics, the game makes the player perform actions in support of characterization and empathy building. The game uses other narrative devices in these story events, like cutscenes and scripted sequences, but only sparsely, because the essential actions do not change (throwing, shooting, etcetera). The designers only need to change the context in order to create the desired narrative effects.

3.3 Papers, Please

In the beginning of this paper, I stated that the practice of narrative design should not solely stick to the same, familiar mechanics we know from popular genres such as shooters or platformers, since this would deprive the practice of fully exploring what kind of narrative experiences designers can create with games, simply because these existing, proven mechanics only allow for particular kind of story events to unfold. Certain story events can simply not be created by mechanics when these mechanics are only concerned with the traversal of hostile spaces. I believe that *Left 4 Dead 2* and *Left Behind* are examples of games that, despite their familiar mechanics, have succeeded in creating compelling stories, mainly because the games cleverly refine the mechanics we know from other shooters and action-adventures. I would like to discuss *Papers, Please* as an example of a game that uses unconventional mechanics to create story events that are uncommon in games.

In *Papers, Please*, the player takes on the role of an immigration officer, working at a border checkpoint. The game takes place in the communist country of Arstotzka. After many years of conflict with a neighboring country, peace is restored, and the border is reopened. The player has to check if the people who desire to enter Arstotzka carry the right papers and do not break any of the immigration laws. There exists a constant tread of “unwanted” individuals entering the country, like revolutionaries who want to bring the government down, but also smugglers and spies.

The core-mechanics of *Papers, Please* revolve around inspecting papers and people. At the checkpoint, the player has to scan them for law violations. Amongst others, the player needs to check: name, appearance, height, weight, sex, issuing city, expire date and the presence of contraband. After the inquiry, the player has to apply a “denied” or “approved” stamp to the papers, either allowing or denying access to the country. There is an income-rule associated with these mechanics: for every legit individual entering the country, the player receives a fee, and for every illegal individual entering the

country, the player receives a fine. There is also an important time-rule: income is generated per day, and each day only lasts a couple of minutes, so the player needs to process enough individuals to earn enough income, but also needs to be careful not to make too many mistakes, since this would result in a loss of income. The player needs this income to sustain his family. Arstotzka is an oppressed and poor country. Her citizens suffer from undernourishment, sickness, hyperthermia, homelessness or imprisonment. At the end of each day, the player can choose to save his income or spend it to housing, medicine, food and heating. If the family is deprived of these essentials for too long, they will eventually die, ending the game.

As previously stated, the innovative mechanics of *Papers, Please* create original stories, about a man with a mindless job, who, sitting in his booth, determines the faith of many: of himself, of his family, of the people at his checkpoint and of Arstotzka. These stories develop with each day, because each day, the status of the player-character, the status of the player's family and the status of Arstotzka change. These changes of status happen first and foremost through the engagement of the player with the mechanics and rules, and only secondly, by other narrative devices such as scripts. To be more precise, changes in states happen depending on whom the player allows to enter the country, and how many immigrants the player can process within a day. For example, if the player repetitively fails to grant access to enough individuals per day, or if the player allows too much unauthorized persons to enter, the player's income (because of the time and income rules) will not be enough to support his family, and their status will rapidly deteriorate. In turn, this could make the player more susceptible to other ways of making a living, like taking bribes from smugglers, human traffickers or revolutionaries. Allowing these individuals to enter the country, affects the future of Arstotzka, and also endangers the player-character, since he can be arrested for treachery. Because the immigration regulations for entering Arstotzka become more complex each turn, that is, the player has to take more restrictions into account when checking people and papers, it becomes increasingly harder to earn a legitimate income. The game will confront the player with other moral dilemmas as well. For example, will you allow access to father and child, but not to the mother, because she has not got the right papers, or will you allow access to a women trafficker with the right papers, even if one of his victims begs you not to.

In short, the driving force behind the development of the story in *Papers, Please* are the mechanics and rules. Depending on the dynamic relation between the mechanics, the rules and the choices of the player, the storyline moves into a certain direction. At heart, these choices come down to allowing or denying access to the people at the checkpoint. Depending on whom the player allows to enter, the player can experience a story of a modal citizen, blindly following the laws of his country; of a Good Samaritan, helping people in need, even though the law does not always allow it; of a corrupt immigration officer, seeking nothing but self-enrichment; of a desperate husband and father, struggling to save his family; and so on. Depending on how the player chooses to engage with the mechanics and rules, any of these stories could unfold.

4 Conclusion

This paper has examined the notion of narrative game mechanics, and has offered an insight in how existing games employ these mechanics. As argued, mechanics and rules influence (but not determine) the actions of players, and this, in turn, influences what kind of story events can unfold. The paper has discussed examples of games that employ mechanics and rules to create engaging story events, focusing on: building tension through spatial conflict, evoking empathy through characterization and creating moral dilemmas through player choices. In summation, narrative game mechanics invite game agents, including the player, to perform actions that support the construction of engaging stories and fictional worlds in the embodied mind of the player.

For a deeper understanding of narrative game mechanics, the relationship between player interaction and character behavior should be studied in more depth. In traditional narratives, the author has direct control over the behavior of characters by simply stating (in words, images or sounds) how characters act. In interactive narratives, the designer does not have the same level of direct control over the characters, since their behavior is (partly) the result of the player's interaction with the system. By designing the interactive system, the narrative designer can only influence, but not determine, how characters act. This paper proposes that further research should look into the design patterns of game systems, such as repetition, progression, player mastery and meaningful choices. Studying these patterns in relation to narrative theory and practices will help in getting an extensive understanding of the notion of narrative game mechanics.

To conclude, by examining the notion of narrative game mechanics, and proposing directions for further research, this paper has aimed to give prominence to an under-discussed topic, laying another piece of the complex, but intriguing puzzle that is narrative game design.

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