

Towards a Theory of Choice Poetics

Peter Mawhorter Michael Mateas Noah Wardrip-Fruin Arnav Jhala
University of California, Santa Cruz
1156 High Street
Santa Cruz, California, USA
{pmawhorter, michaelm, nwf, jhala}@soe.ucsc.edu

ABSTRACT

Digital games that include narrative often let their players influence it, and this is seen as a highly desirable quality in some genres. This influence often takes the form of explicit choices within a fixed layout of branching plot lines. Traditional narrative theory does not suffice when analyzing how these game-stories function, because it has nothing to say about how players interacting with a narrative are affected by choice structures. Drawing on narrative theory, link poetics, procedural rhetoric, and craft advice, this paper introduces the outline of a novel theory of choice poetics: a framework for understanding the narrative effect of choices. Choice poetics covers modes of engagement, choice idioms, and dimensions of player experience affected by choice structure, and concrete examples are given to illustrate each case. This work provides a preliminary framework for talking about the effect of choice structures on phenomena such as agency and immersion, as well as situating craft advice such as “avoid false choices” within a larger theoretical framework that helps explain it. At the same time, it indicates several areas ripe for future theoretical and empirical work that could produce specific insights into how choices affect players.

Keywords

interactive narrative, story games, theory, branching narrative, choice poetics

1. INTRODUCTION

Narratives have an important place in modern culture, from TV dramas to movies to novels. Digital games (many of which include narratives) have become a part of this cultural landscape [47], but the ability of digital games to tell stories is complicated by their interactive elements. The debate between “ludologists” and “narratologists” within games studies (see e.g., [45, 14]) illustrates this: games are much more than just tools for storytelling, but they can also tell

stories in new and unique ways¹, and both of these capacities are deserving of study.

This paper is an attempt to put into formal terms some of the ways in which choices can have meaning in a story. Just as poetics is the study of how narrative communicates, “choice poetics” is the study of how choices work alongside narrative to communicate. Because this area is both broad and poorly-understood, this paper merely introduces a framework describing the major issues that must be addressed by a future theory of choice poetics, giving enough examples to demonstrate the utility of having such a theory. Future theoretical and empirical work is necessary to turn this into a full-fledged theory supporting analysis and design. The aim of this document is thus to introduce choice poetics as a perspective, and to give enough examples to demonstrate its usefulness. Rather than presenting completely novel insights into how narratives that include choices function, this paper collects existing insights and integrates them into a theoretical viewpoint.

2. CHOICE STRUCTURES

To discuss choice poetics we need to pin down what a choice is. To simplify this endeavor, this paper focuses on explicit, discrete choices, although examining implicit and continuous choices is also important for a complete theory of choice poetics. Explicit and discrete choices are common enough in digital games, however, and roughly correspond to plot-level choices in many modern games such as *Heavy Rain* and the *Mass Effect* series [33, 5]. In terms of such choices, a *choice structure* can be defined as follows:

A choice structure consists of the framing, options, and outcomes associated with a choice.

Framing here means content preceding the presentation of a choice that influences how a player interprets it. Options here refers to discrete interface elements that lead to outcomes (e.g. the lines of text referring to pages to jump to in a Choose Your Own Adventure novel). Options, along with the framing of a choice, give rise to expectations about what will happen if a particular option is chosen. Thus the framing *and* options of a choice (as defined here) determine the psychological framing of that choice (see [43]). Finally, the outcomes of a choice refer to the content that is presented when individual options are chosen.

¹In the context of this paper we are interested in how interactivity enables new forms of storytelling, but we do not necessarily believe that this is the only calling of games as a medium.

This definition of a choice structure is key to talking precisely about how choices communicate. Although the distinctions between the parts may be blurred in certain situations (especially when choices are implicit and continuous, such as those in a first-person shooter game), framing, options, and outcomes can often be identified retrospectively in the context of a particular decision. In any case, while the application of choice poetics to implicit and continuous choices may be useful, this paper focuses on discrete, explicit choices as a simpler starting point for analysis.

3. RELATED THEORIES

Several existing theories can help explain the poetics of choices. A theory of choice poetics draws obviously on Aristotle's original theory of poetics: how theater communicates [1]. Aristotle's work inspired the discipline of narratology, and choice poetics can be seen as an outgrowth of that movement: an attempt to formally understand how choices create meaning. Since Aristotle, narratologists have further examined poetics, often trying to find underlying similarities within the structure of narratives (e.g., [15, 32, 3]).

Particularly relevant to choice poetics are studies of specific effects which occur when experiencing a narrative, because choice structures can presumably influence these effects just like narrative structures. These include effects like transportation or identification, and choice poetics must also be concerned with interactive effects like agency. Studies of these effects from a psychological standpoint are useful, including work such as Green and Brock's study of transportation [17], Iran-Nejad's study of interest and affinity [19], and Oatley's work on identification and empathy [30, 31]. Some research even indicates similarities between interactive and non-interactive story experiences, such as effects on outgroup empathy of both narratives and role-playing experiences [24, 20, 37].

Besides theories of narrative, theories both of how games convey meaning and of hypertext fiction are also quite relevant. For example, both procedural rhetoric and operational logics concern how systems and processes can express meaning [6, 44, 26]. Because choices can represent distributions over possible events, they can express meaning through a simulative register [42] just as more complex systems and processes can. Both procedures and individual choices can express possibility spaces, and these expressions can have a powerful effect on players. For example, the game *Train* by Brenda Romero (nee Brathwaite)—part of her *The Mechanic is the Message* series of games—expresses a limiting possibility space that often drives players to disengage or play outside the rules (although a full analysis of *Train* would talk about much more than just the possibility space it creates) [7].

In some senses, choice poetics is simply a subset of procedural rhetoric, focused on choices alone instead of interactivity more broadly. However, this focus on choices allows much more detailed analysis, at the expense of excluding phenomena that rely on more complex interactions.

Another theory that informs choice poetics is link poetics: the ways in which hypertext links can express meaning and evoke aesthetic responses. Authors including Mark Bernstein, Wendy Morgan, and Susana Tosca have studied the poetics of hypertext, producing typologies of links and link structures [4, 27, 40, 41]. Theories of the link are applicable because a list of links in a hypertext can represent a discrete

choice (in fact this strategy is common in hypertext authoring environments such as *Twine*²). Of course, by focusing on just choice structures, choice poetics is able to capture nuances that do not generalize across different hypertextual forms, so a poetics of the link is only a starting point for a poetics of choices.

Regarding how players perceive choices, literature on the psychology of decision-making is relevant. Many aspects of decision-making have been studied, such as the effects of framing [43] and personality [36]. Although these studies are usually performed in the context of everyday choices, many of these findings presumably apply to choices made within game contexts as well. Of course, Huizinga's idea of the magic circle suggests that some aspects of decision-making may change in playful contexts [18].

Finally, choice poetics involves an investigation into modes of player engagement, and existing work on player modelling such as that of Thue et al. is relevant [39]. Nonstandard conceptions of the player as in the work of Tannenbaum et al. ([38]) should also be acknowledged here, as they highlight modes of engagement that standard player models and game analyses may overlook. A theory of choice poetics could even inspire new categories for player modelling that focus on a player's perception of choices as part of a narrative.

3.1 Writing Practice

Although existing theories of narrative and games are important, critical and authorial comments on narratives that incorporate choices are also a vital source of insight for choice poetics. A sentence from a recent review of Telltale Games' *The Wolf Among Us* [9] provides a concrete example of this:

This is not your typical brain-teasing adventure game—it's a character-builder, a choose-your-own adventure where you don't just make decisions, you determine how your character feels about them and how they may affect those around him.

This critique of a branching narrative offers concrete advice—character-building is explicitly valorized. Even more specifically, choices that offer options corresponding to how your character feels about events are being pointed out here as enjoyable, because they give the player control over the character's personality.

Authors as well as players have things to say about the impact of choices. Choice of Games LLC is a company which publishes branching narratives that involve explicit, discrete choices. They also maintain a blog where they sometimes talk about how their authors design the games that they publish, and about common tropes and pitfalls in branching narratives [10]. This kind of practical advice on how to build a branching narrative is extremely relevant to a theory of choice poetics.

4. CHOICE POETICS

Based on craft advice and critiques as well as the theories mentioned above, we have developed an outline of choice poetics. Three main avenues of investigation present themselves: First, consideration of a player's *mode of engagement*; second, an investigation of *choice idioms*; and finally an accounting of *dimensions of player experience* affected by

²<http://twinery.org/>

choice structures. Keep in mind that this is only an outline: a full investigation of each of these topics would reveal more complete views of them, as well as some hypotheses that could be studied empirically.

4.1 Modes of Engagement

Before analyzing choice structures, we have to consider the player's mode of engagement. As with all media artifacts, interactive narratives can be interpreted differently by different players. Some might argue that player responses are so particular there is nothing useful to be said about games by themselves, and that only given concrete knowledge of a particular player can statements about interpretation be made. However, the presence of craft advice for writing (both for traditional and branching narrative) suggests that a practical approach can offer insights which apply to broad player classes. To apply this advice we need to first identify different ways that players approach games and then target theories of interpretation at particular approaches. These approaches, or *modes of engagement*, include aspects of player perspective and motivation, and also the particulars of play practice. To give a sense of the breadth of modes of engagement, here are a few scenarios that involve different modes of engagement:

- Studying a game as a historical artifact.
- Holding a marriage ceremony in an online RPG.
- Playing a game while eating breakfast.
- Playing a multiplayer game with your children.
- Broadcasting one's gameplay to an audience while attempting to beat a game as quickly as possible.

Just as individual readers can engage with a traditional text differently, individual players can approach a story game differently. Because a player's approach influences how or why that player makes choices, it has broad ramifications for how choice structures affect that player. The existence of different player "types" is widely recognized in practical sources such as [23], and analyses of gameplay consistently find that players can be categorized in terms of their approach to a game. For example, in a study of the interactive drama *Façade*, Knickmeyer and Mateas noted two distinct patterns of play: some players were more strategic while others tried to act naturally [21]. Similarly, Thue et al. have developed an interactive storytelling system that models players using a linear combination of several different archetypes [39]. Note that Thue's work shows that different modes of engagement are not exclusive: players may combine modes of engagement and might even switch between different modes during play. The phenomenon of modes of engagement is not unique to games: different modes of engagement have been identified in areas such as education and music composition [22, 8].

As a concrete example, consider a player of a game like *The Walking Dead* who is playing through the game for the second time with a group of friends watching. This example player might choose different options than they did the first time through the game, and this player might also be picking those options for different reasons. Without some understanding of the reasons behind a player's choice (or at least some assumptions about those reasons), we can have little confidence in how the structure of that choice will affect that player.

A partial list of motives for making choices in games sheds some light on this matter³:

- Diegetic Motives:
 - Desire to achieve the "best" outcome from the perspective of a specific character.
 - Desire to achieve a character's goal.
- Semi-diegetic Motives:
 - Sympathy for or empathy with a character.
 - Desire to select the "most realistic" option according to the character making the decision.
 - Desire to manipulate some semi-diegetic quality (for example a character's strength or alignment score) through choices.
- Extra-diegetic Motives:
 - Desire to achieve the "most interesting" outcome.
 - Desire to entertain an audience.
 - Desire to explore a game exhaustively.

It is immediately apparent that players with different combinations of these motives will interpret choices and outcomes differently. For example, a player who wants the best outcome for their character may be disappointed by a tragic ending, but a player who seeks the most interesting story might be impressed by the same outcome.

Besides motives for choosing, players may approach a game differently. With a novel, possible approaches include skimming it, reading the ending first, and performing a close reading, not to mention "normal" reading. A branching narrative may also offer the ability to play linearly (choosing only a single option to explore at each choice point) or non-linearly (exploring multiple options when a choice is given). This non-linear or exploratory mode of engagement may be employed when first encountering a game, but it is almost inevitable when playing a game one has already played before (whether linearly or not).

Between motives and approaches the player's mode(s) of engagement dictate how they experience a game. Some common modes of engagement include:

- Avatar play – playing through a game linearly while making choices as if you were your avatar. This mode of engagement corresponds with high player-protagonist identification and might promote the experience of transportation. Players typically favor options that lead to good outcomes for the protagonist. Choose Your Own Adventure novels are an example of games that encourage avatar play by addressing the reader directly in the second person.

- Role play – playing through a game linearly while making choices based on what the focal character "would do." The personality of this character may be dictated by the game, constructed by the player, or a mix of both. Players appreciate having options and outcomes that allow them to express a desired persona. This is different from avatar play in that the player takes on a persona different from their "normal" persona when making choices: avatar play can be thought of as "role-playing the protagonist as yourself" (of course, a player may approach a game with hybrid of avatar

³Emphasis here on *partial*: note that many of the example scenarios listed above include more esoteric motives.

play and role play). Role-playing games are obvious examples of games that encourage role play, often via explicit instructions, but also via character customization and other game elements that invite players to build their own personae for characters.

- Power play – playing through a game linearly while making choices in order to maximize diegetic and/or semi-diegetic outcomes for the focal character. This mode of engagement can put more emphasis on gameplay elements than on the narrative (e.g., making choices that maximize a character’s game-related statistics but which do not make sense in terms of that character’s personality). Players favor options and outcomes that lead to a more powerful protagonist. Most games that involve action encourage and reward power play, even those that also involve role-playing elements. Constructs like statistics that increase based on in-game success, and challenges that are based on these statistics create a structure that rewards power play. The majority of modern digital games incorporate some structures that facilitate power play, and many discussions of what makes a game fun revolve around power play.

- Exploratory play – play that explores the outcome space of the choices encountered. This mode of engagement is often driven by curiosity and the desire to see what is possible within the artificial space of a game world. Players may prefer diversity of options and outcomes, but the sense of a single coherent plot that unifies the possibility space may also be enjoyable. Because curiosity is an intrinsic motivation, the mere presence of options that seem as if they would lead to divergent outcomes may encourage exploratory play. A simple form of exploratory play is replaying a game to see different endings; games that advertise diversity of endings as a feature are encouraging this.

- Analytical play – playing with or through a game for the purpose of critical analysis. Decisions in this mode are often modelled on some other mode, in order to see the work as a “normal” player would. Analytical play can also have an explicit question in mind that drives decisions. This mode of play is the most likely to reveal structural qualities of the possibility space of a game. While games rarely encourage this mode of engagement, many game reviews are the product of analytical play. For example, a conclusion like: “You can’t ever actually fail in Heavy Rain. There is no Game Over screen, and nothing will force you to have to replay anything,” is clearly the result of analytical play [35].

- Critical play – play as a means of communicating with and/or critiquing society, as examined in Mary Flanagan’s book of the same name⁴ [13]. In this mode the player is a performer, and the game is a combination of stage and instrument. Casual players may borrow some things from this perspective when playing in front of an audience. A full exploration of this mode of engagement would require not only a theory of choice poetics but also a theory of “play poetics”—how play can communicate to an audience (especially when that audience may be familiar with the game being played). Although critical play is often intentionally contrary to the design of a game, games like *September 12th* that are designed as critiques encourage critical play [29].

⁴Flanagan uses the term “critical play” to include approaches to both game play and game design, whereas in this context we mean only the former. Flanagan also identifies several sub-categories of critical play, such as “unplaying.”

This is of course only a partial list, and these modes of engagement are also stereotypical: actual players may fall somewhere in between modes on this list, employ different modes of engagement at different times during a play session, or of course incorporate other goals or approaches entirely (which would of course also be deserving of critical examination). It is worth emphasizing here that games often encourage a particular mode of engagement, depending on which mode(s) of engagement their design best supports. This can happen via a variety of means; for example *Heavy Rain* designer David Cage has explicitly asked players not to play the game more than once [16].

Once modes of engagement are taken into account, much more detailed analyses of choice poetics are possible. It is hard to say anything about the impact of a choice without knowing how a player approaches that choice, but if we make an assumption about the player’s mode of engagement, the choice’s impact becomes clearer. It is also clear that certain analyses and design patterns privilege certain modes of engagement. For example, a game that provides an illusion of choice may be successful when played linearly in an uncritical manner, but the illusion may be broken when a player engages in exploratory or analytical play. By acknowledging different modes of engagement much more can be said about the impact of specific choices, which allows us to single out and investigate idiomatic choice structures.

It is worth noting here that this paper is focused on “internal choices,” that is, choices of protagonist action as in an adventure game. Choice structures can be presented in many different ways, however. For example, a choice of perspectives rather than actions might be offered, or options could be completely extra-diegetic and opaque. In Raymond Queneau’s *A Story as You Like It* choices are even phrased as if offered by the author directly to the reader [34]. There are endless possibilities for this kind of choice framing, only a few of which have been well-explored by authors. This paper focuses on internal choices because there is a critical mass of content that uses internal choices, including many modern AAA games, but a fully developed theory of choice poetics would cover many different styles of choice.

4.2 Choice Idioms

A choice idiom is a generic structure or pattern for all or part of a choice that generally achieves a specific effect (perhaps assuming a particular mode of engagement). For example, a dilemma is a choice that forces a decision between two highly-valued (or highly-reviled) outcomes. For players invested in the fate of a character, a dilemma for that character can provoke anxiety and suspense, making the player pause to carefully consider their options. A dilemma can be a good way to force the player to think critically about what happens subsequently rather than just accept what a game is telling them. A dilemma might also serve to encourage exploratory play, whether because of curiosity about both outcomes or because of refusal to accept the implications of an outcome once the choice is made. A dilemma can also be *false* if the outcomes associated with its options are not of comparable value or if both outcomes are the same—this latter case is an example of two choice idioms (a dilemma and a false choice) being combined.

Identifying choice idioms is useful because they offer a direct method for constructing choices to achieve a specific effect. Each choice idiom is also a micro-theory of choice

poetics specific to the given choice structures it encompasses. Without going into much detail, here is a list of choice idioms intended to demonstrate the range of idioms that can be identified⁵:

- **Dead-end option** – A dead-end option is an option for a choice which ends the story in an unsatisfactory manner (often with the death of the protagonist). Dead ends are often reviled by players, but they can be a powerful source of tension: after hitting a dead end, a player who skips back and takes a different branch will be playing with the outcome of the dead end in mind. Games that include a death mechanic which sends the player back to an earlier point in the level (e.g., many platforming games) make use of this.

- **False choice** – A false choice is a choice where all of the different options lead to the same outcome. This can literally be a single outcome for all options, or it can be minor variations on an outcome where the variations are disproportionately small in relation to the expected variation engendered by the options. False choices can be used to create the illusion of a richly branching story without spending the resources necessary to do so. They can also be used as powerful thematic tools: A choice that really isn't one can suggest a lack of responsibility or self-control on the part of the protagonist. *Mass Effect* includes some false choices where multiple distinct options lead to the same line of dialogue being spoken [5].

- **Blind choice** – A blind choice is one where the framing does not give enough information for the player to form distinct expectations about the outcomes associated with different options. Without enough information to make an informed choice, the player may feel lost, disoriented, or just frustrated. Just like a false choice, this can reinforce a narrative theme. For example, when the protagonist gets lost in a maze, the player can be given blind choices about which direction to go. If a blind choice is reversible or has minor consequences, of course, it may simply be a means of encouraging exploration. Roguelike games are famous for incorporating blind choices which eventually become informed choices after many playthroughs.

- **Dilemma** – As explained above, a dilemma is a structure that describes the expectations raised by different options. Dilemmas can be differentiated based on the types of expectations that they create (for example, whether the two options both create positive or negative expectations; see [2] for a categorization of dilemmas based on option valences). *Heavy Rain* has been praised for the dilemmas that it presents to the player, usually through the use of two equally *undesirable* outcomes [33].

- **Flavor choice** – A flavor choice is a choice with relatively minor (but potentially long-lasting) consequences. The outcome of a flavor choice may have a pervasive effect on the world, but it does not make much difference for the overall course of events. For example, the choice of which weapon to equip in a computer role-playing game might make lots of subtle changes to how a player experiences the game, but it may not ultimately affect the events of the story or the player's overall power. A choice such as what to name a character or what color hair they should have could be even less consequential. Judicious use of flavor choices can make

a game feel as though it has a much more open possibility space than it actually does. Flavor choices may disproportionately influence a player's perception of their in-game identity relative to other choices because they are often made for more personal reasons. The option to play through a game as one of a number of different characters is a common type of flavor choice.

- **Delayed effect** – A delayed effect happens when a choice has two or more outcomes that are mostly identical in the short term but diverge in the long term. In other words, the effect of the choice does not manifest itself until long after the choice has been made. Because these effects can come as a surprise to the player, many critics recommend avoiding them, but delayed effects can make powerful statements about "what is important" because when the outcome is made apparent the player usually perceives the associated choice as being more important than it originally appeared. Choices with delayed effects can also be a focal point for regret, although this can easily lead to frustration. Games with binary morality systems often have delayed effects, where a player's choices accrue to determine which endings are available.

- **Puzzle choice** – A puzzle choice is a cryptic choice where some options are clearly better than others but it is not immediately clear which options are the good ones. Puzzle choices can disrupt narrative engagement by forcing the player to think dispassionately about narrative events, but they can also be used to prompt recollection of specific scenes or events when they hinge on narrative clues. Point-and-click adventure games are famous for their frequent use of puzzle choices.

- **Unchoice** – An unchoice is a "choice" that has only one option. Just like a false choice it can be used to signal that the protagonist has no choice in a situation, but an unchoice is much more overt. Encountering an unchoice can be jarring, because it explicitly breaks from the expected form of a choice. If choices are present whenever the protagonist has to commit to an important course of action, an unchoice can signal such commitment without giving the player an opportunity to alter the narrative flow. Compared to the other idioms in this list unchoices are quite rare.

As with all of the lists presented so far, this list is only partial. In fact, a full accounting of choice idioms is impossible, because new idioms can be developed as new branching narratives are created. This list of choice idioms helps demonstrate the complexity of choice structures, however, and it also begins to identify some of the ways in which choice structures can impact a player.

4.3 Dimensions of Player Experience

Some of the idioms identified in the previous subsection talk about things like tension or disorientation: experiences that a player might have as a result of being presented with a choice. When experiencing either a branching or a linear narrative a player's experience has qualities in various mostly independent dimensions. Choice structures in particular can influence some of these dimensions, and analyzing these effects is the converse of identifying choice idioms. Whereas identification of idioms proceeds from choices to the impact they might have, analysis of dimensions of player experience examines specific effects and asks what choice structures might produce them.

⁵These are not novel idioms, but rather well-known idioms discussed from the novel perspective of choice poetics.

As with modes of engagement and choice idioms, here is a partial list of dimensions of player experience affected by choice structure:

- **Agency** – A player’s experience of agency is largely dependent on choices, so it makes sense that choice structure would affect agency. For example, choice structures where the framing and options presented do not give the player sufficient information to make an “informed” decision likely decrease the player’s sense of agency. The experience of agency is rooted in the player having informed control over some aspect of a game [46]. Choice structures designed to encourage agency would thus focus on presenting critical information in the framing and options of a choice while ensuring that outcomes are to some degree predictable.

- **Influence** – Influence then is the player’s raw ability to affect story outcomes, regardless of whether they are able to predict what effect their choices will have before they make them. Without influence, agency is impossible (although an illusion of agency may or may not be achievable), but influence can exist even when agency is lacking. In fact, there are multiple levels of agency in games [25], and many games that combine well-designed gameplay with a fixed plot offer agency at the level of game mechanics (extra-diegetic agency) but offer mere influence (if that) in terms of their story worlds. Choice structures can obviously impact a player’s perception of influence by including options that lead to both divergent and diegetically important outcomes. At the same time, without playing a game multiple times players may rely heavily on genre conventions to estimate how much influence they are being granted, which allows some games to exploit these conventions to offer an illusion of influence [12].

- **Autonomy** – Autonomy is the idea that the player can pursue their own goals within the structure of a game. Like agency, it has both diegetic and extra-diegetic variants. Players may feel a sense of diegetic autonomy when a game offers options that support multiple diegetic approaches to the problems in the story world. This feeling that one has the opportunity to act in an individually unique way is different from agency in that a game that does not allow players to approach problems from different perspectives (i.e., which has narrow material affordances) may still achieve high agency if the player has limited formal affordances. Clearly, the options and outcomes dictated by choice structures play an important role in player’s perceptions of both diegetic and extra-diegetic autonomy.

- **Identification** – Identification in the traditional narrative sense means identifying with a character in a story, usually the protagonist. At a basic level, choice structures that are presented as if the player were a character in the book (internal choices) presumably support identification with said character more readily than choices presented in some other way (perhaps as an abstract choice of which viewpoint to take, for example). Choices can also encourage the player to make judgements from the perspective of a character, effectively asking the player to take on the character’s point of view (although different players may or may not actually do so). Inasmuch as choices support role-playing as a mode of engagement, players who role-play may be able to identify strongly as the character that they are helping to create. Choices also have an impact on character realism. If

choices are presented as the decisions of a diegetic character, then the options given should make sense according to what that character can realistically accomplish (and what options that character would realistically consider) in order to promote character realism.

- **Transportation** – Transportation is the feeling that one is actually located within the diegetic realm of the story. Character realism as discussed above is important, but even more broadly than that a balance between options and outcomes must be present. If an outcome is too disappointing (or otherwise seems unfair or incongruent) given the option that lead to it, transportation may be broken. At the same time, a branching narrative can communicate not just “what did happen,” but over several readings it can communicate “what could have happened.” This ability to express a range of outcomes can be used to express the dynamics of a fictional world more deeply than a linear story can. Along with these expressions of dynamics, choices can make the player an active participant in the world to some degree, and both of these factors can be used to encourage transportation on the part of the player.

- **Absorption** – Absorption is similar to transportation, but deals with being absorbed in the process of playing with a game (or reading a book, or some other activity). The term “absorption” is used here rather than “immersion” because immersion is often associated with the particular sensory nature of an experience, whereas absorption more clearly indicates simply mental focus on a task. The term “suture” from film theory is also similar, but is broader as it encompasses aspects of transportation and identification. As used here, absorption refers to a state where the player’s complete attention is focused on a task, without discriminating among reasons for that focus. Absorption is (a small) part of the broader phenomenon of flow: what Csíkszentmihályi refers to as “optimal experience” [11]. Choice structures relate to absorption in two ways: first, they can become an attention sink, and second, they can diminish absorption by diverting attention from the narrative. Because choices can be puzzles, choice structures can demand complicated logical reasoning, and players may become absorbed in this task. On the other hand, such reasoning may be a distraction for someone already absorbed in the narrative of a game. Complicated choices can thus either enhance or diminish absorption depending on the player and on the story that they appear in. A puzzling choice might even enhance narrative absorption if it requires thinking from the point of view of characters, such as a choice of who to accuse in a detective story. At the same time, choice structures can block absorption in other ways. For example, a lack of character realism caused by an unrealistic option might hinder not only identification and transportation, but it might distract the reader and reduce absorption.

- **Responsibility** – Players can feel responsible for diegetic outcomes when playing a game, especially if they interact via an avatar. Brenda Romero’s board game *Train* mentioned above provides evidence of this: many players simply refuse to continue play at some point or begin to actively try to circumvent the stated rules because they are uncomfortable continuing a game where their actions represent deporting Jews during the Holocaust [7]. Not every game aspires to have such an emotional impact, but even a slight feeling of responsibility on the part of a player can increase their en-

agement with a game. Choice structure is clearly influential in this regard: games where choices seem unfair discourage players from feeling responsible for their decisions.

- Regret – Players can feel regret in a game at several levels: both diegetically in terms of story outcomes, but also extra-diegetically in terms of game elements like points (e.g., regret that your choice led to you losing points). As the existence of an alternative is a precondition for feeling regret, introducing choices into a story gives the author an opportunity to manipulate regret to some degree. Beyond the obvious pairing of a bad outcome with an innocent-seeming option, regret may be felt more strongly when an alternative outcome is known with certainty, and the structure of a choice can reveal this. For example, a dead-end outcome might explicitly reveal what happens in another story branch without forcing the reader to back-track manually (or perhaps, in a digital setting, without allowing them to). Regret is a great example of a specific emotion that players might feel when playing a branching narrative, which readers of linear narratives almost never feel in the same way (one can regret continuing to read a novel, but that is quite different from regretting a choice in an interactive work).

As with the lists of modes of engagement and idioms provided above, this list is partial. However, the depth with which each of these topics could be explored is evident, and the perspective offered by choice poetics offers a framework for such exploration. By asking the question “What is a poetics of narratives which include choices?” and in particular, “How do choice structures affect the experience of a story game?” we can begin to formalize various phenomena surrounding such narratives, and the resulting microtheories can be used to examine both story games and games as a whole in more detail. Of course, these theories need refinement before being used as the basis for psychological studies or game design, but having a theoretical framework is the first step towards such goals.

5. CONCLUSIONS

Even the outline of a theory of choice poetics discussed so far can begin to answer questions in specific contexts. For example, given a game designed to be role-played, how might this mode of engagement be enabled? The theory presented so far would advise that choices be constructed keeping in mind the possible personae that the audience might want to take on. To maintain focus on the narrative, choices should be internal, focused on character actions and attitudes rather than on game statistics. At the same time, choices that are difficult from a character’s perspective such as dilemmas might be used to encourage identification. Finally, story outcomes should depend on the player-character’s constructed persona where possible.

Although this advice is not novel, choice poetics provides language to name specific constructs, and lays the groundwork for moving beyond existing wisdom in both understanding choice structures and identifying new ones. We invite others to consider a choice poetics perspective when analyzing games that present narratives, and to expand upon this theory by discussing specific modes of engagement, choice idioms, and dimensions of player experience in more detail. We intend to build on this work ourselves to implement computational models of choice poetics for use within an AI system that generates branching narratives.

6. REFERENCES

- [1] Aristotle; Butcher trans. *The Poetics of Aristotle*. Macmillan, 1917.
- [2] H. Barber and D. Kudenko. Dynamic generation of dilemma-based interactive narratives. In *Proceedings of the Third Artificial Intelligence and Interactive Digital Entertainment Conference*, pages 2–7, 2007.
- [3] R. Barthes and L. Duisit. An introduction to the structural analysis of narrative. *New Literary History*, 6(2):237–272, 1975.
- [4] M. Bernstein. Patterns of hypertext. In *Proceedings of the Ninth ACM Conference on Hypertext and Hypermedia*, pages 21–29. ACM, 1998.
- [5] BioWare. *Mass effect*. Microsoft Game Studios, 2007. Various platforms.
- [6] I. Bogost. *Persuasive Games: The Expressive Power of Videogames*. MIT Press, 2007.
- [7] B. Brathwaite and J. Sharp. The mechanic is the message: A post mortem in progress. *Ethics and Game Design: Teaching Values Through Play*, pages 311–329, 2010.
- [8] A. R. Brown. Modes of compositional engagement. *Mikropolyphony*, 6, 2001.
- [9] M. Buckley. Episode one imbues faith in the wolf among us, 2013. <http://gamingtrend.com/2013/10/24/episode-one-imbues-faith-wolf-among-us/>. Accessed 2013-11-15.
- [10] Choice of Games LLC. Choice of games game design blog category, 2010. <http://www.choiceofgames.com/category/blog/game-design/>. Accessed 2013-11-15.
- [11] M. Csíkszentmihályi. *Flow: The psychology of optimal experience*. Harper Collins, 1:991, 1990.
- [12] M. W. Fendt, B. Harrison, S. G. Ware, R. E. Cardona-Rivera, and D. L. Roberts. Achieving the illusion of agency. In *Interactive Storytelling*, pages 114–125. Springer, 2012.
- [13] M. Flanagan. *Critical Play: Radical Game Design*. The MIT Press, 2009.
- [14] G. Frasca. Ludologists love stories, too: Notes from a debate that never took place. In *Level Up Conference Proceedings*. University of Utrecht, November 2003.
- [15] Freytag; MacEwan, trans. *Technique of the Drama*. S.C. Griggs and Company, Chicago, IL, USA, 1894.
- [16] J. Gaskill. Quantic dream’s david cage: Play heavy rain several times, “kill the magic of it”, 2009. <http://www.g4tv.com/thefeed/blog/post/698809/quantic-dreams-david-cage-play-heavy-rain-several-times-kill-the-magic-of-it/>. Accessed 2013-11-17.
- [17] M. C. Green and T. C. Brock. The role of transportation in the persuasiveness of public narratives. *Journal of Personality and Social Psychology*, 79(5):701, 2000.
- [18] J. Huizinga. *Homo Ludens*, volume 3. Taylor & Francis, 1949.
- [19] A. Iran-Nejad. Cognitive and affective causes of interest and liking. *Journal of Educational Psychology*, 79(2):120, 1987.
- [20] P. A. Katz and S. R. Zalk. Modification of children’s racial attitudes. *Developmental Psychology*, 14(5):447, 1978.

- [21] R. L. Knickmeyer and M. Mateas. Preliminary evaluation of the interactive drama facade. In *CHI'05 Extended Abstracts on Human Factors in Computing Systems*, pages 1549–1552. ACM, 2005.
- [22] J. A. Langer. *Envisioning Literature: Literary Understanding and Literature Instruction*. ERIC, 1995.
- [23] R. Laws. *Robin's Laws of Good Game Mastering*. Steve Jackson Games, 2001.
- [24] J. H. Litcher and D. W. Johnson. Changes in attitudes toward negroes of white elementary school students after use of multiethnic readers. *Journal of Educational Psychology*, 60(2):148, 1969.
- [25] S. Mason. On games and links: Extending the vocabulary of agency and immersion in interactive narratives. In *Interactive Storytelling*, pages 25–34. Springer, 2013.
- [26] M. Mateas and N. Wardrip-Fruin. Defining operational logics. *Digital Games Research Association (DiGRA)*, 2009.
- [27] W. Morgan. Heterotopics, towards a grammar of hyperlinks. In *4th Hypertext Writers' Workshop: The Messenger Morphs the Media*, volume 99, pages 21–25, 1999.
- [28] W. F. Motte. *Oulipo: A Primer of Potential Literature*. University of Nebraska Press Lincoln & London, 1986.
- [29] Newsgaming.com. September 12th, a toy world. Web, <http://www.newsgaming.com/games/index12.htm>. Accessed 2013-12-14, 2003.
- [30] K. Oatley. A taxonomy of the emotions of literary response and a theory of identification in fictional narrative. *Poetics*, 23(1):53–74, 1995.
- [31] K. Oatley. Why fiction may be twice as true as fact: Fiction as cognitive and emotional simulation. *Review of General Psychology*, 3(2):101, 1999.
- [32] V. Propp. *Morphology of the Folktale*, volume 9. University of Texas Press, 1973.
- [33] Quantic Dream. Heavy rain. Sony Computer Entertainment, 2010. PlayStation 3.
- [34] R. Queneau. A story as you like it. *translated and reprinted in [Motte 1986]*, 1967.
- [35] C. Roper. Heavy rain review, 2010. <http://www.ign.com/articles/2010/02/10/heavy-rain-review>. Accessed 2013-12-14.
- [36] B. Schwartz, A. Ward, J. Monterosso, S. Lyubomirsky, K. White, and D. R. Lehman. Maximizing versus satisficing: Happiness is a matter of choice. *Journal of Personality and Social Psychology*, 83(5):1178, 2002.
- [37] W. G. Stephan and K. Finlay. The role of empathy in improving intergroup relations. *Journal of Social Issues*, 55(4):729–743, 1999.
- [38] J. Tanenbaum. Imagining new design spaces for interactive digital storytelling. In *Interactive Storytelling*, pages 261–271. Springer, 2011.
- [39] D. Thue, V. Bulitko, M. Spetch, and E. Wasylishen. Interactive storytelling: A player modelling approach. In *Proceedings of the 3rd AAAI Conference on Artificial Intelligence in Interactive Digital Entertainment*, pages 43–48, 2007.
- [40] S. P. Tosca. The lyrical quality of links. In *Proceedings of the Tenth ACM Conference on Hypertext and Hypermedia*, pages 217–218. ACM, 1999.
- [41] S. P. Tosca. A pragmatics of links. In *Proceedings of the Eleventh ACM Conference on Hypertext and Hypermedia*, pages 77–84. ACM, 2000.
- [42] M. Treanor. *Investigating Procedural Expression and Interpretation in Videogames*. PhD thesis, Santa Cruz, CA, USA, 2013. Ph.D. dissertation.
- [43] A. Tversky and D. Kahneman. The framing of decisions and the psychology of choice. *Science*, 211(4481):453–458, 1981.
- [44] N. Wardrip-Fruin. Playable media and textual instruments. *Dichtung Digital*, 1, 2005.
- [45] N. Wardrip-Fruin and P. Harrigan. *First Person: New Media as Story, Performance, and Game*. MIT Press, 2004.
- [46] N. Wardrip-Fruin, M. Mateas, S. Dow, and S. Sali. Agency reconsidered. *Breaking New Ground: Innovation in Games, Play, Practice and Theory. Proceedings of DiGRA 2009*, 2009.
- [47] D. Williams. The video game lightning rod. *Information, Communication & Society*, 6(4):523–550, 2003.