Opportunistic Storytelling: An Experience-Oriented Strategy for Playable Interactive Narratives

Emmett Tomai

University of Texas – Pan American, 1201 W. University Dr. Edinburg, TX, 78539
tomaie@utpa.edu

Abstract

AI research in interactive narrative often lacks specificity as to the player experience it is trying to enable. In this paper, we consider a set of desirable elements from narrative and interactive experiences, and show by looking at playable experiences from industry and academia that combining them has the potential to be limited or self-defeating. To address these issues, we propose *opportunistic storytelling*, a set of design principles for near-term playable interactive narratives.

Introduction

AI research in interactive narrative seeks to enable the creation of novel human-computer experiences that combine qualities of interaction and narrative. The central quality of narrative being pursued is *immersion*: the ability to interpret characters and events from inside a story world, as a consistent reality, rather than outside, as a set of design decisions (Gerrig 1993). Closely related is what we will refer to as *drama*: the ability to care about the characters (i.e. interest, empathy, identification) and to find significance in the events. The central quality of interaction being pursued is *agency*: the ability to act and have those actions impact the environment (Thompson et al. 1998). Character agency is the most common focus, where the player acts by selecting actions for a character to perform.

Even within the scope laid out above, the experience of interactive narrative remains largely unexplored. There are few playable experiences available from the research community. This makes it difficult to measure the impact of mixing narrative and interactive elements. New AI techniques may be proposed that theoretically increase immersion, drama or agency, but it is rare to get any evaluation of how the whole player experience is changed.

This paper is targeted at AI researchers working to address this by creating playable interactive narratives in the near-term. Interactive narrative is often described as an opportunity to live out a story, to be the character you want, and to mold the story you want. In current implementations working with authored plot content, both industry games and research systems, this vision translates into the mechanics of *narrative choice* and *predictable choice*. We argue that these mechanics are low-agency, and their experiences are likely to degrade further into *playing the narrative*. We propose that for playable interactive narratives in the near-term, these issues can be best addressed by grounding player actions and decisions in consistent, learnable game play. We propose *opportunistic storytelling*, a set of player experience design principles that changes the vision from inviting a player to act out a story to telling a story about what a player is already doing.

Game Play and Narrative Choice

Video games are the most developed examples of high-agency human-computer interaction in a story-like setting. Thompson, Armstrong and Thomas define the strength of agency in terms of awareness of available alternative actions, perception of the connection from action to outcome, prediction of that connection and investment in the outcomes (Thompson et al. 1998). This closely matches game designer Raph Koster's definition of game play as the exploration and mastery of the possibility space generated by a system of rules (Koster 2010). Good games have an interesting system that is consistent and can be induced from play. The player must be able to repeat actions in varying contexts, receive sufficient feedback to perceive the connection from action to outcome, and have the opportunity to practice, fail and retry. As the player masters the system, their ability to predict outcomes is increased, and a good game gives them interesting ways to

exploit their mastery: solving puzzles, winning contests or creative expression. Clearly defined goals and objectives provide extrinsic investment in the outcomes, while mastery and exploitation provide intrinsic.

Some aspects of narrative combine very well with game play. Framing aspects (cf. Koster 2012) such as setting, aesthetics, back story and static characterization are used in most games to lend dramatic meaning to player actions. But pre-determined narrative exposition throughout the game ignores what the player is doing and can create a frustrating disconnect in agency (Costikyan 2004). In response to this problem, games have attempted to add responsive narrative elements by giving players *narrative choices*, explicit or implicit, that directly impact the direction of the narrative exposition. The outcome of a narrative choice is not based on a system of rules, but on authorial decision. Narrative choice has weak agency, because the player cannot learn or predict what actions are available, or what their outcomes will be. If the player is content to accept the outcomes that the author chose, they can still experience immersion, drama and weak agency. However, if the author's choices don't match the player's expectations, then those qualities will suffer. Worse, if the player does not like the outcomes, or wants to achieve specific other outcomes, then they will be forced to *play the narrative*, trying to guess what choices will get them where they want to go. This is a poor game that lacks any of those qualities.

In classic branching games such as visual novels, playing the narrative is so standard that players are allowed to try all options (or save and reload) until they find the "right" one. In more recent titles that integrate narrative choices such as BioWare's *Dragon Age* and *Mass Effect* series, players search internet boards to find the right sequences of choices to get the ending they want. In Quantic Dreams' high-profile, AAA title *Heavy Rain*, narrative choice is the primary mechanic, letting players participate in cinematic scenes. It has a substantial branching factor to the plot, giving the player a good amount of actual control over major plot points. But it had highly contentious, mixed reviews complaining that it was not really a game, the story was contrived, players felt railroaded, characters were inconsistent and the "twist" ending was unfair. In contrast, TellTale Games' very well received *The Walking Dead* uses very similar mechanics, but has almost no player impact on the story arc. Because it is a low-agency, exploratory experience, it is a good fit for narrative choice.

Narrative choice as a primary form of interaction is best suited to low-agency, exploratory experiences. Unless the choices are so well defined that they have predictable, significant outcomes, attempts to increase agency in such an experience will likely push to the players to play the narrative, to the detriment of the experience.

AI Research and Predictable Choice

AI research in interactive narrative has explored techniques to replace or augment static authorial decisions with dynamic decisions based on consistent computational models. The vision, and the research goal, is to attain the human-level ability to come up with believable, dramatic outcomes that keep the story moving. If those outcomes could be reliably perceived and predicted (or appreciated in contrast to what is predicted), then high agency could be maintained. We call the mechanic of interacting with such a system *predictable choice*.

Façade (Mateas & Stern 2003) is still one of the most ambitious and complete playable interactive narratives from AI research. In it, the player can type free natural language dialogue at any time, and the system attempts to generate believable responses with dramatic significance to an ongoing story about a couple's marital problems. It is a predictable choice experience, based on human knowledge of language and relationships. A consistent model of social games informs character actions and reactions. *Façade* was well received as a novel experience and impressive system, but it cannot sustain coherent responses for the range of player input. The creators note that the natural language interface created unrealistic expectations, and that conveying the state of the internal social games to the player was a major challenge (Mateas & Stern 2005). Players regularly explore the parsing system, try out different lines and generally poke at it to see how the characters react. They are playing the narrative.

IN-TALE (Riedl & Stern 2006) uses the reactive planning of *Façade* for low-level believable character responses, combined with the Automated Story Director, a high-level planning component, for drama management. Together, they generate outcomes that are consistent with character and in line with narrative goals. *IN-TALE* is a more even experience because it has a more focused domain – a military training exercise. While the trainee has more freedom to physically move around and interact, there are strong expectations, procedures and goals in place that the trainee is highly motivated to follow. *IN-TALE* is a predictable choice experience, but many of those predictions have been established a priori. Similarly, the narrative-centered educational game *Crystal Island – Outbreak* (Rowe et al. 2009) grounds predictable choices in a research process to discover the cause of a mystery illness. As with *IN-TALE*, the focus on an established process helps the system and the player to stay on the same page regarding appropriate outcomes. Combined with a game-typical interface and action set, there is much less incentive and opportunity to play the narrative.

Systems by Cavazza and colleagues use authored plans that independently control characters (Cavazza et al. 2002). There is no plan for the overall story, which emerges from

the player-character interactions. In some sense, the player is still being offered narrative choices; each interaction with a character triggers an authored outcome for that character. However, the distributed control among characters is more robust and less likely to obviously fail, and the character responses are likely easier to accept as reasonable, if not predictable. Similarly, in *FearNot!* (Louchart & Aylett 2004), appraisal-driven agents generate their own responses and actions. This approach can eliminate narrative choice, to the extent that the agent model is perceptible and predictable. *Prom Week* (McCoy et al. 2013), the successor to *Façade's* social games, makes social interaction into full-fledged game play with a set of underlying, consistent rules that the authors call social physics. Again, there is no narrative choice, as the story that arises from interaction with the system is emergent. In all these cases, the cost is that authorial control is lessened over the story. Depending on the domain and experience goals, emergent narrative can be a good fit, as humans readily read their own stories into events.

Predictable choice systems that attempt to merge player actions with authored plot content inherit the same problems as narrative choice systems. If the dramatic space is very small and well agreed-upon, such that the expectations of the player, author and system match, then predictable choices can be consistent enough when the player is attempting to exert character agency. However, as soon as there is room for ambiguity, attempts to increase player agency are likely to result in playing the narrative for exploration or in search of a desired outcome. And current simulations are limited in the domains that they can operate in without breaking down in the face of unconstrained player actions.

Opportunistic Storytelling

Narrative choice works with more expressive dramatic experiences, but is only appropriate for low-agency exploration. Predictable choice simulations may expand that agency at the cost of expressiveness, but they are not currently able to maintain reasonable responses or minimize play-the-narrative breakdowns. Both of these mechanics are significantly limited in merging immersion, drama and agency for near-term, playable interactive narratives. But one of the key issues lies in the vision of living out a story, which leads to an experience where every action is expected to be dramatically significant, and the only real goal is to advance the story. This increases the expectations placed on outcomes to be expressive and predictable, which neither mechanic can reliably deliver. Instead, consider stories that arise when *unusual things happen to people going about usual business*: the strange interaction on the train to work, the funny thing that

happened at the store, and so on. This implies that the characters have a context of actions, plans, expectations and goals aside from what makes the story interesting. For interactive narrative, game play can provide that context, to ground player actions and decisions. Each player action is a game play choice, with outcomes and implications for goals the player is invested in. But each player action can also have more-or-less predictable narrative outcomes, to be opportunistically presented to the player when they work. Instead of trying to coerce the player to act out a story, this *opportunistic storytelling* seeks to tell the player unusual, unique stories about the usual, repetitive game play that they are already engaged in. This does not eliminate the challenges created by predictable and narrative choice mechanics. Rather, it mitigates against heavy reliance on the outcomes of those choices lining up with player expectations and preferences, as well as the need for predictable simulations to deal with every player action in every context. Opportunistic storytelling is not a particular architecture or AI technique, but a set of player experience design principles, which also assume the principles of good game play. The principles are:

1. All player actions result in consistent game play outcomes.
2. Game play goals are independent of narrative progress.
3. Narrative outcomes are presented when they fit with player actions.
4. Narrative outcomes do not interfere with game play outcomes.

How narrative outcomes are generated and presented is the question for AI research, and is compatible with much of the work already discussed. The point of opportunistic storytelling is to guide the creation of playable environments that are more conducive to exploring the player experience of those AI interventions.

Conclusion

For near-term, playable interactive narratives with some authorial control over the direction of the story, the mechanics of narrative choice and predictable choice place notable limitations on merging immersion, drama and agency. While the common vision of inviting the player to act out the story leaves little room to work around those limitations, the principles of opportunistic storytelling - embracing game play and telling stories about it - provide an immediately tractable approach to mitigate their impact. We recommend this approach for researchers to move ahead with playable systems now so that we as a field can better explore and define the player experiences of interactive narrative that we are attempting to enable and improve.

References

Cavazza, M., Charles, F., & Mead, S. J. (2002). Interacting with virtual characters in interactive storytelling. In *Proceedings of the first international joint conference on Autonomous agents and multiagent systems: part 1* (pp. 318-325). ACM.

Costikyan, G. 2004. Games, Storytelling, and Breaking the String. In N. Wardrip-Fruin and P. Harrigan (Eds.) *First Person: New Media as Story, Performance, and Game*, MIT Press.

Gerrig, R. 1993. *Experiencing Narrative Worlds: On the Psychological Activities of Reading*. New Haven: Yale University Press.

Koster, R. 2010. *A Theory of Fun for Game Design*. O'Reilly Media, Inc.

Koster, R. 2012. Narrative is not a game mechanic. http://www.raphkoster.com/2012/01/20/narrative-is-not-a-game-mechanic/.

Louchart, S., & Aylett, R. 2004. Narrative theory and emergent interactive narrative. International Journal of Continuing Engineering Education and Life Long Learning, 14(6), 506-518.

Mateas, M. and Stern, A. 2003. Façade: An experiment in building a fully-realized interactive drama. Game Developers Conference, 2003.

Mateas, M. and Stern, A. 2005. Structuring Content in the Facade interactive drama architecture. In *Proceedings of the First Artificial Intelligence and Interactive Digital Entertainment Conference*.

McCoy, J., Treanor, M., Samuel, B., Reed, A., Mateas, M. & Wardrip-Fruin, Noah. 2013. "Prom Week: Designing past the game/story dilemma." *Proceedings of the 8th International Conference on Foundations of Digital Games*, Chania, Crete, Greece. May 14-17.

Riedl, M. O., & Stern, A. 2006. Believable agents and intelligent story adaptation for interactive storytelling. In *Technologies for Interactive Digital Storytelling and Entertainment* (pp. 1-12). Springer Berlin Heidelberg.

Rowe, J., Mott, B., McQuiggan, S., Robison, J., Lee, S., & Lester, J. 2009. Crystal island: A narrative-centered learning environment for eighth grade microbiology. In *Workshop on Intelligent Educational Games at the 14th International Conference on Artificial Intelligence in Education, Brighton, UK*(pp. 11-20).

Thompson, S. C., Armstrong, W., & Thomas, C. 1998. Illusions of control, underestimations, and accuracy: a control heuristic explanation. *Psychological bulletin*, *123*(2), 143.