

“The Long Walk” From Linear Film to Interactive Narrative

Keshav Prasad,¹ Kayla Briët,² Obiageli Odimegwu,¹
Olivia Connolly,¹ Diego Gonzalez,³ Andrew S. Gordon¹

¹University of Southern California, Los Angeles, California USA

²Fullerton College, Fullerton, California, USA

³Williams College, Williamstown, Massachusetts USA

{keshavpr, odimegwu, oconnoll}@usc.edu, kaylabriet@gmail.com, drg4@williams.edu, gordon@ict.usc.edu

Abstract

Advances in hardware and software for virtual reality and 360-degree video afford new opportunities for immersive digital storytelling, but also pose new challenges as players seek an increased sense of meaningful agency in fictional story-worlds. In this paper, we explore the interaction designs afforded by voice-controlled interactive narratives, where players speak their intended actions when prompted at choice points in branching storylines. We describe seven interaction design patterns that balance the player’s need for meaningful agency with an author’s goal to present an intended storyline. We argue that these structural designs are orthogonal to the content of a story, such that any particular story may be effectively restructured to use different patterns. By way of demonstration, we describe our efforts to remix and restructure a 360-degree film entitled *The Long Walk*, transforming it from a largely linear narrative with minimal interactivity into a voice-controlled interactive narrative with meaningful player agency.

“The Long Walk”

The Long Walk is an experimental interactive narrative artwork that combines theatrical 360-degree video production with voice-based interaction, immersing players in a fictional story from the perspective of its central character. Players take on the role of a young female intern in a dysfunctional and misogynistic workplace, where they face sexual harassment from their boss, inappropriate behavior and judgmental comments from co-workers, and an unsympathetic Human Resources representative. With a surrealist and satirical tone, *The Long Walk* explores issues of gender roles in work environments, enabling players of all demographics to experience difficult situations from a first-person perspective. Approximately 15 minutes in duration, *The Long Walk* was filmed using a 360-degree video camera, where professional actors engaged directly with the camera as if it were an additional character in each scene (Figure 1). The stitched 360-degree video was edited into a sequence of 20 discrete scenes, and embedded in a software system that requires the player to use voice commands to advance the presentation of the story.

The Long Walk was built using the Data-Driven Interactive Narrative Engine (DINE) authoring tool (Bellasai et al. 2017), which allows authors to craft branching sto-

rylines that are navigated by players via natural language input. Using this platform, authors design interactive narratives as interconnected sets of *pages*, each consisting of a *setup* and a set of *outcomes* that are shown in response to player actions. Rather than choosing actions from a list, players articulate their intentions via natural language input (text or speech), which is analyzed by DINE to automatically select the most coherent outcome using natural language processing technologies. Authors can link these outcomes to subsequent DINE pages or to endings, allowing for arbitrarily complex branching storylines (Packard 1979). Alternatively, an outcome can be displayed without advancing the storyline, prompting the player to narrate another action in the same context. In these cases, DINE will select the best outcome that has not already been shown to the player. The DINE platform has been used previously to develop interactive audio narratives, where page setups and outcomes are presented to players as produced audio clips, and automated speech recognition is used to accept player input (Roemmele, Mardo, and Gordon 2017; Mardo and Gordon 2017). *The Long Walk* extends this approach using 360-degree video content, creating a visually immersive narrative experience where the player’s voice serves as the means of interaction.

Although these previous authors have used DINE to evoke a sense of free-will and player agency, *The Long Walk* was conceived and produced as an experience with a largely linear storyline. Except from one decision at the end of the story that selects among three possible endings, player interaction in *The Long Walk* does not change the trajectory of experience. Players hear an audio prompt at the end of each of 20 scenes, and must speak out loud the action that their character should do next. The DINE platform is robust in handling linguistic variations of the single behavior that the authors expected, but players that misinterpret the storyline cues or purposefully try to derail the storyline will see outcomes that do not coherently follow from their actions.

This play mechanic of interaction without choice is, in many respects, similar to “quick time events” as used in early narrative games like *Dragon’s Lair* (Cinematronics) and, more recently, *Heavy Rain* (Quantic Dream). Quick time events, when perceived as relevant to actions taking place in the story world, can improve the player’s sense of agency, immersion, sense of time, and story comprehension

(Neo and Mitchell 2017), and help resolve the tension facing designers of interactive fiction between authorial intent and player choice. Unlike traditional fiction, which is linear by its very nature, interactive fiction affords its players the ability to advance the story through their own choices. Although player choice offers a new way to experience stories, unrestricted freedom may result in narrative incoherence or a failure for the player to uncover the author’s intent. The game *Heavy Rain* demonstrates the use of quick time events to mediate this tension. *Heavy Rain* prompts users to identify with storyline characters through a cinematic interaction schema. First, the game’s cinematic aesthetic first the player’s attention to a specific character’s mental state. Then, the game pauses and prompts the player to push a single button in order to command the character and advance the plot. “The match between player action and character action contributes to the process of identification and serves to make the choices feel more real to the player” (Bizzocchi and Nixon 2013). *The Long Walk* intensifies the *Heavy Rain* interaction mechanism by employing the user’s own voice as the game controller, trading button presses for spoken words.

On the other hand, some writers criticize the quick time event for compromising the creative possibilities of interactive storytelling and exerting excessive control over players. Auerbach (2014) notes, interactive fiction, unlike prose or film, prompts not only emotional identification, but also player agency. Players of *The Long Walk* may be speaking voice commands, but can only ever advance the story by uttering (some linguistic variant of) the single correct action. In this sense, it is not the player commanding the story, but rather the story commanding the player along a predetermined narrative trajectory. Although quick time events encourage identification, they do not provide players with true choice. Moreover, identification falls short of the aesthetic promise of interactive fiction by obviating the possibility for agency. Over-reliance on quick time events to prompt players robs them of freedom to explore a space, confining them.

After completing *The Long Walk*, we wondered whether it was possible to redesign the work in a manner that afforded true choice, without rewriting or re-filming its content. Of course, we could have rewritten the piece as a true branch-

ing story, where decisions made by the player had a causal effect on future events, and produced new video content for each storyline branch. However, our interest was in whether the existing 360-degree video clips could be remixed and reused directly, but using a different structural design that afforded a greater degree of narrative agency to the player. Our hypothesis was that the DINE tool enables a wide variety of possible interaction designs for voice-controlled interactive narratives, and that there was at least one that was adequately suited to the available video content. In this paper, we describe our efforts to redesign the structure of *The Long Walk*, moving it from a linear film to a nonlinear interactive narrative with true player agency.

Interaction Design Patterns

Our aim in redesigning *The Long Walk* was to resolve the tension between free will and coherence. In order for the author’s intent to come to fruition, players must navigate the interactive fiction playspace in a manner that preserves narrative coherence. On the other hand, imposing a constrained set of possible actions upon a player removes their perception of free will. It is a clash of wills: the will of the author’s intent pitted against the player’s will to agency. “This is a difficult stance to design from because it places story designers in a position where they must be designing against the assumed preferences and desires of their players rather than for them” (Tanenbaum and Tanenbaum 2009). We reframed the relationship between author and player as a trust-building, improvisational game in which both parties are committed to the search for meaning. Reframing player choice as a search for meaning significantly simplifies the authorial burden. Rather than accounting for all possible choices a player might make, the author now anticipates only the meaningful choices a player might make. Moreover, designers no longer adopt the adversarial approach of constraining player freedom, but rather of facilitating a player’s commitment to uncovering the meaning of the interactive experience. This new conceptual lens allowed us to explore emergent interaction design patterns by analyzing the relationships between player input and authored outcomes within the DINE tool.

With arbitrary branching storyline structures, DINE sce-



Figure 1: Stereographic projections of three frames from “The Long Walk”

narios are similar to early *Choose-Your-Own-Adventure* books (Packard 1979), with a few key differences. Players are not presented with a set of possible actions to choose from; instead, they invoke outcomes through unconstrained verbal utterances. Authors provide players with an initial setup that might suggest a set of possible actions the player may take to advance the story. Resourceful players may infer other possible actions that are not made explicit in the setup. Bellasai et al. (Bellasai et al. 2017) provides an example text-based DINE story, *Pull Over / Sleep Under*, where the player takes on the role of a truck driver charged with driving a shipment across a dark highway late at night. In the initial setup, the author describes the truck drivers candy bar, cigarette, and energy drink. The truck driver is very tired, and must ultimately decide whether to pull over for the night to rest, or to continue driving all night at risk of falling asleep behind the wheel. Thus, the player can end the story at any time by choosing one of the two terminal outcomes (sleep or drive through the night), but they are also free to explore the playspace.

In addition to the terminal outcomes in *Pull Over / Sleep Under*, the players also have the ability to smoke a cigarette, drink a can of soda, or eat a candy bar. If players input commands matching one of these actions, they invoke an outcome that provides more narrative context, but does not advance the central plot. For example, choosing to eat a candy bar uncovers more prose and more of the drivers backstory, but the final decision to pull over to sleep or drive through the night remains the same. Resourceful players may input commands that are not explicitly indicated in the text, such as to “roll down the window of the truck.” Although these commands are not explicitly suggested in the setup, they are implied by our commonsense understanding of what a tired driver might possibly do. Such hidden outcomes offer players an opportunity to explore the playspace for so-called “Easter eggs” and backstory. In turn, they offer the author an opportunity to think from the player’s perspective. The mutual attempt to understand the situation through the perspective of the other is analogous a conversation, where both parties make statements in an attempt to build trust and make meaning together. In this sense, the relationship between DINE narrative designer and player can be seen as a trust-building game (Tanenbaum and Tanenbaum 2009).

Just as there are many types of conversations that can occur between two people, the DINE tool affords a variety of different interaction styles that support trust-building and sense-making as a collaborative endeavor between author and player. To explore this space of design patterns, we considered the possible ways that narrative can emerge from the dynamic relationship between user inputs and authored outcomes. For any DINE page, the author presents users with a story situation, characters, and a narrator. Moreover, the users infer the possible actions they can take from the context provided by the setup. As users trigger outcomes, they discover more backstory about the situation, the style of the piece, and perhaps develop enough understanding to interpret the author’s intent. Although nonterminal outcomes may hint at the type of input required to trigger a terminal outcome, their purpose need not be regarded as a railing, or

constraint on player action. Rather, nonterminal outcomes serve to build on the relationship between the author and the player. Nonterminal outcomes that anticipate unconventional user input indicate that the author has thought about the story from the player’s point of view. They also help to give players greater insight into the narrative world and the mind of the author.

Here, we present seven distinct interaction design patterns for voice-controlled interactive narratives, each distinguished by how a narrative emerges via differences in the relationship between author and player.

We would like to emphasize that the seven design patterns presented here are by no means a complete typology of possible interaction design patterns for narrative fiction. Rather, this typology served as an effective internal tool for our design team as we considered how to remix the pre-filmed 360 video content into a story structure affording greater free will and exploratory possibility to players of the experience. Moreover, it is important to note that the patterns derived here emerge from the structure inherent to the DINE system, which classifies user input to the most relevant pre-authored outcome based on example inputs. DINE is particularly effective at exploring the meaning-making relationship between author and reader due to its structural qualities. Other interactive fiction systems may afford entirely different patterns for interactive story design. Nevertheless, the following typology demonstrates the efficacy of a structural approach to understanding the unique affordances of a specific interactive fiction technology. Moreover, documenting our thought process as we moved from linear to non-linear narrative design provided a useful set of tools for other authors trained in traditional narrative to adapt their work for interactivity. We believed if we could remix *The Long Walk* according to the narrative design patterns developed internally, we could demonstrate a design process that could be used to adapt any traditional, linear story into an interactive piece that could be published on DINE.

“The Snail” As exemplified by the original version of *The Long Walk*, the author designs a linear story and requires the player to “turn the page” by vocalizing the action that is expected of them, i.e. a vocal “quick time event.” A coherent narrative emerges only when the author has provided the necessary cues to the player, and when the player follows these cues exactly. Inspiration: *following the spiral of a snail’s shell.*

“The Diving Board” The Diving Board: As exemplified by *Pull Over / Sleep Under* (Bellasai et al. 2017), the author poses a clear choice to the player, expecting them to decide, but providing them with various ways to delay their decision. Each diversion delays the inevitable choice, and encourages the player with increasing urgency to make their decision. A coherent narrative emerges as the player exhausts the space of diversions, and takes decisive action. Inspiration: *On a high dive platform, you eventually either jump or climb back down.*

“The Detective” The author poses a problem to be addressed, a mystery to be solved, or a puzzle seeking a so-

lution, along with an exploratory context where clues can be found. Each player action hints at the solution, which may have been obscured in the author's initial setup. A coherent narrative emerges as the player pieces together the solution from evidence, and takes the action that resolves the situation. This is the dominant pattern used in the interactive audio narratives of previous authors (Roemmele, Mardo, and Gordon 2017; Mardo and Gordon 2017). Inspiration: *identifying the villain at the scene of a crime*.

“The Closet” The author presents the player with a pallet of options, and encourages him or her to try some. As the player selects each one, a memory is triggered of some past event. As the player progresses through the available options, the memories fill in a storyline of related events, providing a narrative of their own that may or may not be relevant to the present-tense experience of the player. A coherent storyline emerges as the player pieces together their own (fictional) past and identity through these memories, and identifies their (possible) relevance to the player's current situation. Inspiration: *trying on the clothes in one's closet*.

“The Stanley Parable” As in “The Snail,” the author designs a story-world with clear expectations of player behavior, but designs outcomes that punish adherence to expectations and reward disobedience. A coherent narrative emerges as players discover this inversion of the cooperative game mechanic, and discover that the relationship between author and player includes concerns that are above the diegetic level of the narrative. Inspiration: *the conflict between narrator and player in the interactive fiction The Stanley Parable (Galactic Cafe)*.

“The Sisyphus” As in “The Snail,” the author designs a story-world with clear expectations of player behavior, but designs outcomes for these actions that require their repetition. With only one, tedious action to undertake, the player's compliance is rewarded with the author's reflections on the task at hand, as told in each outcome. A coherent narrative emerges as the player sees the iteration through to its completion, exhausting the author's critique of the futility of the task, or celebration of the joy found in doing trivial things. Inspiration: *the Greek myth of Sisyphus, punished to roll an immense boulder up a hill for eternity*.

“The Weather Man” The author designs a story-world where the player is not among its characters, but instead invites the player to co-author the exogenous events not under the control of storyline characters, within some established bounds, e.g. weather events, the roll of a die, or the contents of a package. These player choices, in turn, effect how the storyline unfolds for the non-player characters. A coherent narrative emerges as the player discovers the reach and limitations of their control over the events of the story-world, established by the scenario author. Inspiration: *writing the headline of weather section of the protagonist's morning newspaper*.

Redesigning The Long Walk

Rather than crafting a completely new scenario, we chose to remix *The Long Walk* from a linear story driven by quick

time events into a nonlinear interactive narrative experience, with the aim of testing the effectiveness of the interactive design patterns described in the previous section. This exercise both demonstrates the efficacy of our seven interaction design patterns, and also provided us with a set of compelling design constraints. Given that *The Long Walk* had already been filmed, we could not feasibly create new visual content. We had to rely on the material that already existed in order to build our interactive experience. The dual challenge of adapting a linear story into a nonlinear story structure and of remixing existing content into a coherent nonlinear experience challenged us to select an interaction design pattern that could both increase player choice while maintaining narrative coherence. For this reason, we chose to remix *The Long Walk* according to “The Closet” interaction design pattern.

“The Closet” afforded our team the ability to envision the events of *The Long Walk* as nonlinear and order-independent. For us, the archetypal scenario for “The Closet” places players in front of the player-character's own bedroom closet, and invites them to try on different outfits and examine the personal objects adorning the space. Choosing to wear a particular article of clothing triggers a memory of the player either purchasing this article of clothing, receiving it as a gift from a friend, or experiencing a memorable moment of their life while wearing the clothing. As with human memories of past life events, the order in which they are recalled need not be linear to achieve narrative coherence. Indeed, memory is a common literary and filmic storytelling technique used to present linear stories through a nonlinear discourse (Tanenbaum and Tanenbaum 2009). In DINE scenarios, this device affords players free agency in the exploration in their immediate space, while allowing the author a means of nonlinear storytelling that is robust to a player's choices.

The Long Walk, as originally produced, consisted of several related scenes with substantial time-shifts between them. Applying “The Closet” interaction design pattern required us to reimagine these scenes as memories of past events, evoked via player exploration in a present-tense situation. After reviewing the available video content, the best launching point for this exploration seemed to be from the climax scene of the original piece, where the player converses with a representative in the human resources (HR) office of the fictional company. Our remixed version of *The Long Walk* begins as the player enters the HR office with, hearing a voice-over of a young woman who says, “OK...Here goes”. Once in the HR office, only minimal situational context is provided: the woman facing the player asks, “How can I help you?” Within the context of this conversational setting, the player is free to explore the space via unrestricted utterances directed toward the HR representative. We anticipated the variety of statements and questions that might be posed by the player, and crafted a set of twelve outcomes to provide broad coverage over different classes of utterances.

Table 1 lists the twelve outcomes, each of which is available as a response to player action in the context of a single DINE page. Each outcome begins in the present-tense, with the player facing the HR representative. The scene then

Player action	Function	Bridging dialogue	Video content
<i>What is going on?</i>	explanation	“The memories started flooding back to me. I remember when it started...”	A flashback of the player following two coworkers to the company’s first big meeting.
<i>How are you?</i>	explanation	“This small-talk was getting us nowhere”	A flashback of the HR woman agreeing to mentor the player, then commenting snidely about the player’s dress.
<i>Is there a problem?</i>	discovery	“This team at work...I’ve never seen anything like it”	A flashback of the company’s big meeting during which a female coworker is rudely silenced by a male team member
<i>That was rude!</i>	discovery	“I guess I wasn’t the only one going through this”	A flashback of the company’s big meeting, during which male team members make rude comments about female coworkers
<i>People here are strange</i>	discovery	“Something never felt right about this company”	A flashback of the player’s boss behaving creepy in the player’s office
<i>That was inappropriate behavior</i>	discovery	“I can’t believe my boss Richard would say that!”	A flashback of the player’s boss speaking micro-aggressions at work
<i>I think my boss is harassing me</i>	evaluation	“He totally crossed the line!”	A flashback of the player’s boss making vulgar comments to the player.
<i>I feel judged by people at work</i>	evaluation	“I just wanted to be heard”	A flashback of a male coworker advising the player to behave submissively in order to succeed in the workplace
<i>People here are hostile</i>	evaluation	“I had to do something...this stuff had to stop”	Flashback to a company meeting in which coworkers berate the player
<i>I want to file a complaint</i>	decision	“okay, here goes...”	The HR rep files the report, noting the effort is futile and foolhardy. In the next scene, coworkers mock the player for standing up to them. END
<i>Nevermind, I don’t want to complain</i>	decision	“What’s the point? It’ll be the same wherever I work...”	The HR rep notes complaints create obstacles at work. In the future, the player watches the HR rep receive a promotion. END
<i>I want to quit and sue!</i>	decision	“I could finally see this place for what it was”	The HR rep files a complaint. In the future, a surreal sequence unfolds in which all the coworkers crowd the player menacingly. END

Table 1: The twelve outcomes of *The Long Walk* after applying “The Closet” interaction design pattern

dissolves into a flashback, introduced via a short “bridging dialogue” meant as the inner-voice of the player-character, which serves to acknowledge the choice made by the player and establish coherence between their action and a memory of a past event. The ensuing flashback uncovers details about the narrative world the player inhabits, before returning the player to the present moment. These flashbacks reveal that player-character’s company fosters a hostile working environment plagued by domineering male team leaders and submissive female coworkers, and that the player-character’s own boss is harassing her. Although outcomes can be coherently viewed in any order, we anticipated that players’ progression through this single DINE page would involve four stages. In an initial *explanation* phase, the player would seek to understand why they are speaking with an HR representative, guided by their own commonsense expectations. Flashbacks would then move the player into a *discovery* phase, where they recall uncomfortable events and inappropriate behavior. Soon, the player would make an *evaluation* of their situation, which in turn would lead them to make a *decision* about their future at the company. True

player choice is this decision is supported by the last three outcomes in Table 1, which advance the present-tense storyline to one of three possible endings.

Evaluation

We gathered qualitative feedback on our remix of *The Long Walk* from 10 undergraduate student intern players of our experience and an additional 15 viewers of the experience during a systems demonstration event for immersive interactive technologies. For this event, the DINE system was deployed as a locally hosted web application to enable fast loading of 360-degree video assets, while still permitting the use of the large-vocabulary speech recognition technologies built into recent versions of the Google Chrome browser. Rather than using a head-mounted display for video content, participants controlled the direction of their gaze via mouse input, with stereographic projection of the video directly in the browser enabled using the *Three.js* Javascript library.

Observing player behavior, we found that players did, indeed, explore the narrative space as we had expected. Provided with a brief narrative setup, players to move from

confusion, on to exploration of the narrative. Players relied on commonsense reasoning to infer their own identity and discover the rules of the story world, consistent with a constructionist theory of narrative discourse comprehension (Niehaus and Young 2010). Once the players established an understanding of their own identity and the narrative world, they began to explore its backstory. As players uncovered more flashbacks, they began to evaluate the narrative world through a framework of personal morals. Players experienced emotional responses to plot events in which characters are placed in situations of dramatic tension, as predicted by our own conception of the players personal moral lens (Mani 2010).

Players of *The Long Walk* encountered some incoherence while playing through the experience. The flashback mechanism employed by “The Closet” interaction design paradigm introduced players to an opening scene with limited expositional context, and some players were unsure of how to interact with the system, while other were not fully aware that the sequential scenes they uncovered were in fact flashbacks. Nevertheless, some players were able to discover the interaction scheme and understand the artistic and narrative objectives of *The Long Walk* with minimal guidance from us beforehand, and all of the players and viewers of the experience agreed that the interaction design pattern increased the players sense of agency, thereby heightening the thematic and aesthetic goals of the linear film. We hope to investigate the effectiveness of “The Closet” and other narrative interaction design schemes through controlled experiments in future work.

Discussion

Our remix of *The Long Walk* into a nonlinear interactive experience demonstrates the effectiveness of “The Closet” pattern. In this example case, a linear story is transformed into a nonlinear experience by conceptually reframing the relationship between player choice and authorial intent as collaborative rather than adversarial. This new version of *The Long Walk* is a surrealist social commentary with a dark tone, in stark contrast to the carefree tone of the archetypal story we envisioned for “The Closet” interaction design pattern. While *The Long Walk* presents a bleak office setting filled with disrespectful coworkers mistreating a young female intern, “The Closet” was imagined as a person looking through their closet and reminiscing about the origins of each article of clothing contained within. The former is intended as a critical social commentary and the latter is playful and whimsical, but both share the same underlying interactive design pattern. Both stories emerge after placing a user in a seemingly small narrative playspace that expands into the realm of memories of past events. The storytelling can be nonlinear and order-independent, while still maintaining coherence through the player’s (re)construction of the narrative world through remembering. Here, the interaction design is orthogonal to the narrative content, enabling this one pattern to be applied to a wide variety of stories.

Indeed, we argue that all seven of the interaction design patterns may be broadly applicable across a diverse range of genres, tones and writing styles. This breadth stems not

from a characteristic present in the diegetic level of the narrative, but rather from the diversity of relationships that can exist between author and player at an extra-diegetic level of discourse, and the opportunities afforded by the turn-taking game mechanic of the DINE tool. The mechanism of setup leading into the progressive unfolding of authored outputs in response player inputs reframes storytelling as conversational and, fundamentally, a collaboration between author and player. This builds on previous work suggesting the value of collaborative frameworks for authoring interactive narrative story worlds (Hills 2010), where the emphasis is on sense-making as the central activity in the interaction.

Situating players of interactive narrative within a conversational interaction scheme draws inspiration from practices in game interface design (Martens and Hammer 2017). This approach emphasizes player choice as a fundamentally meaning-making activity. Moreover, conversational interaction schemes shift the designer’s focus away from predicting and controlling player behavior toward understanding and reciprocating player intent. The player is no longer just interpreting, but also contributing to the narrative through their own efforts at sense-making. Given the proper interaction design, the interpretive act is now an act of authorship in and of itself.

While players of *The Long Walk* collaboratively engage with its authors in the process of sense-making, the authors retain their central roles as experience designers and story-world creators, in contrast to previous attempts and collaborative human-computer story writing (Swanson and Gordon 2012). In this respect, the interaction design patterns presented in this paper have more relevance to traditional forms of storytelling (text, audio, film) than to wholly improvisational forms of collaborative story creation. For producers of traditional (linear) media, these design patterns chart a path forward toward the creation of experiences with meaningful interactivity, without breaking the fundamental craft of storytelling through media.

Likewise, the practice of sense-making, or building collaborative understanding, is fundamental to the actual experience of storytelling in everyday conversational contexts. Although the plays of Shakespeare, for example, follow tight and conventional narrative structures, they often contain conversations or stories that resemble those of everyday life. The seemingly banal and irreverent conversation between two foolish guards in *Hamlet*, for example, is no longer an expositional tool serving to advance the internal plot of the play, but is instead the fictive work itself. The approach to storytelling becomes inverted from a top-down approach of crafting a singular, tight structure instead to a bottom up emergent collaboration at making sense of the diegetic and mimetic content of the discourse. This can be viewed a residual form of storytelling that is evident across storytelling mediums, or from a more radical perspective, the emergence of a new way to tell stories altogether (Williams 1977, Chapter 8). Regardless, the diversity of storytelling genres, tones and techniques made possible by the seven interaction design patterns we have identified should not be reigned into a monolithic conceptual design theory or practice of authorship. Rather, we see them as an opportunity to take imagi-

native new directions in designing interactive fiction (Rouse 2016). It is far too early in the field to decide on a single interaction scheme or even a taxonomy of schemas. As the discussion of quick time events has shown, even an effective and pleasurable design for the author-player relationship might not explore the full creative possibilities afforded by interactive narrative. The seven interactive design patterns presented here are not intended to be comprehensive or authoritative, but rather an invitation to explore a broader set of opportunities in future works.

Acknowledgments

This material is based upon work supported by the National Science Foundation under Grant No. 1560426. The projects or efforts depicted were or are sponsored by the U. S. Army. The content or information presented does not necessarily reflect the position or the policy of the Government, and no official endorsement should be inferred. The cast and crew of *The Long Walk* included Mikael Mattson, Jonathan von Mering, Brett Candace, Margaret Cychosz, Jenna Bellassai, Robert Fuchs, and Cristian Guzman.

References

- Auerbach, D. 2014. The quick time event. <http://www.thewhitereview.org/features/the-quick-time-event/>.
- Bellassai, J.; Gordon, A. S.; Roemmele, M.; Cychosz, M.; Odimegwu, O.; and Connolly, O. 2017. Unsupervised text classification for natural language interactive narratives. In *Proceedings of the 10th International Workshop on Intelligent Narrative Technologies, Snowbird, Utah, October 5-6, 2017*.
- Bizzocchi, J., and Nixon, M. 2013. Press X for meaning: Interaction & identification in heavy rain. In *Proceedings of DiGRA 2013: DeFragging Game Studies*, pp. 303-339.
- Hills, D. 2010. A conversational framework for emergent collaborative storytelling. In *Proceedings of the 3rd International Workshop on Intelligent Narrative Technologies, Monterey, CA, June 18, 2010*.
- Mani, I. 2010. Predicting reader response in narrative. In *Proceedings of the 3rd International Workshop on Intelligent Narrative Technologies, Monterey, CA, June 18, 2010*.
- Mardo, P., and Gordon, A. S. 2017. Traveler: A voice-controlled interactive audio narrative. In *Proceedings of the 13th AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment (AIIDE'17), Snowbird, Utah, October 5-9, 2017*.
- Martens, C., and Hammer, M. A. 2017. Languages of play. In *Proceedings of the Foundations of Digital Games Conference, Cape Cod, MA, August 14-17, 2017*.
- Neo, T., and Mitchell, A. 2017. Beyond the gutter: Interactivity and closure in comics. In *Proceedings of the 9th International Conference on Interactive Digital Storytelling (ICIDS-2016), Los Angeles, CA, November 15-18, 2017*.
- Niehaus, J., and Young, R. M. 2010. A method for generating narrative discourse to prompt inferences. In *Proceedings of the 3rd International Workshop on Intelligent Narrative Technologies, Monterey, CA, June 18, 2010*.
- Packard, E. 1979. *The Cave of Time*. New York: Bantam Books.
- Roemmele, M.; Mardo, P.; and Gordon, A. S. 2017. Natural-language interactive narratives in imaginal exposure therapy for obsessive-compulsive disorder. In *Proceedings of the Computational Linguistics and Clinical Psychology Workshop (CLPsych) collocated with the 2017 Conference of the Association for Computational Linguistics (ACL), August 3, 2017, Vancouver Canada*.
- Rouse, R. 2016. Media of attraction: A media archeology approach to panoramas, cinematography, mixed reality and beyond. In *Proceedings of the 9th International Conference on Interactive Digital Storytelling (ICIDS 2016), Los Angeles, CA, November 15-18, 2016*.
- Swanson, R., and Gordon, A. S. 2012. Say anything: Using textual case-based reasoning to enable open-domain interactive storytelling. *ACM Trans. Interact. Intell. Syst.* 2(3):16:1-16:35.
- Tanenbaum, K., and Tanenbaum, J. 2009. Commitment to meaning: A reframing of agency in games. In *Proceedings of the 8th Conference on Digital Arts and Culture (DAC), December 12-15, Irvine, USA*.
- Williams, R. 1977. *Marxism and Literature*. Oxford, UK: Oxford University Press.