Towards an Interaction Model
for Interactive Narratives

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Abstract. In the discussion of interactive narrative experiences and
story-driven games, much of the current work has focused on analyz-
ing and proposing models and frameworks based on narrative theory
and ludology. However, the players' experience and interaction with such
narrative structure and content is a topic that is currently understud-
ied in the field. Specifically, questions regarding how the player interacts
and perceives the impact of their interaction on the story are currently
unanswered. This paper presents a step towards defining an interaction
model that can be used to design and compare how a user participates
in an interactive narrative.

Keywords: Interactive narrative · Interaction models · Close reading ·
Game analysis · Narrative interaction patterns · User experience

1 Introduction

One of the most challenging topics in video game design is the inclusion of
narrative. While many games already incorporate narrative, how to embed nar-
ratives in games and how players can influence it is still being debated. Much of
the research done in the field of interactive narrative focuses on several major
themes, including narrative representation [1], user inclusion [2], and author-
ing [3]. Previous Work on computational models of narrative such as [4–6] has
limited consideration for the players' experience, focusing instead on player mod-
eling with an emphasis on how to account for player actions within an AI guided
interactive narrative system. Unfortunately, this positions the player as a con-
straint to work around, rather than incorporating the interaction as part of the
design. Two exemplary works that account for narrative presentation and/or user
participation are IDtension [5] and the multimodal interactive narrative appli-
cations of Cavazza et al. such as [7]. Many researchers have argued for increased
attention to the user experience in interactive narratives [5,8]. To the extent of
our knowledge, however, there are no models or frameworks that describe user
interaction in interactive narrative in a generalized way without being associ-
ated with a particular meaning or artifact. While examples of similar models

	Façade	The Stanley Parable	The Wolf Among Us	Long Live the Queen	Oxenfree	Her Story	Gone Home	The Novelist	Final Fantasy XV	To the Moon	Undertale	Black Closet	Papers Please	ZE: Virtue's Last Reward	Prom Week	Persona 4	Dragon Age: Inquisition	Heavy Rain
Playtime	C	C	C	C	C	C	C	C	C	C	C	10 hr	C	10 hr	C	C	10 hr	C

Fig. 1. Each game selected for the study and the amount of time they were played for. 15 games were played to the end of the story, 3 were not completed due to time constraints. C = completed

exist for games [9], such works do not target interactive narratives. We propose that an interaction model can help address this because it can describe the way interactive narrative content is delivered and experienced.

Beudouin-Lafon defined an interaction model as: "a set of principles, rules and properties that guide the design of an interface. It describes how to combine interaction techniques in a meaningful and consistent way and defines the "look and feel" of the interaction from the user's perspective." [10] This work aims to realize the first part of this definition by describing consistent interaction patterns and design elements utilized by successful interactive narrative games.

To develop the model, a qualitative study was conducted using a close reading approach to identify a set of interaction patterns used in 18 commercial narrative games chosen for the study (see Fig. 1). We identified four distinct constructs of narrative interaction that make up the model: Structure, Narrative Mechanics, Interaction, and User Experience. Each construct consists of interaction design elements and patterns. This paper presents an overview of the model and its components.

2   Methodology

The games chosen for the sample were recognized for their narrative and varied in terms of product level and design features. Games that didn't include single-player modes and/or featured emergent narrative were excluded. The final sample consisted of 18 games (see Fig. 1). Close reading, a qualitative method originating in literary theory, was chosen to analyze the games. This method was chosen specifically to focus on user experience rather than how the narrative was structured and implemented. The data was analyzed using grounded theory approach and qualitative thematic analysis. A modified version of the "naïve reader" lens was used for the close reading [11]. The reading was performed by one researcher, as recommended by [12].

The researcher recorded herself describing her interaction with each game throughout each playthrough. The close reading was heavily driven by questions of how the player perceived her interaction, how the interaction was presented to her, and what means were provided to give the player both control over and feedback on her experience. Upon completing a playthrough of each game, the researcher transcribed the recordings. The data was then analyzed using a qualitative thematic analysis similar to [13] by two researchers.

3   The Model

The analysis resulted in patterns that can be grouped into four constructs or categories: Structure, Narrative Mechanics, Interaction, and User Experience. The first three constructs account for how the user can view the design and dynamics within the interactive narrative. The fourth constructs accounts for the result of this interaction and perception i.e. the user experience itself.

Structure is the computational layout of the story content, including graphics, text, and dialogue, represented as a graph. A player can experience story content by using mechanics to proceed from one node of story content to the next. Different structure types refer to how the content is arranged. When categorizing the story structures existing terminology was utilized or adapted. Where none existed in the literature, new terms were defined. Six different computational story structures were identified: Linear, Branching, Foldback, Broom, Hidden Story, and Opportunistic Story.

Narrative mechanics describes the rules and patterns through which the player interacts with the narrative. In this study we focus on story progression mechanics, a subset of narrative mechanics that consists of rules or patterns used to allow the player to progress through the story. Five distinct story progression themes were identified in the data: Progression through choice, progression through task completion, progression through scripted scenarios, progression through discovery, and progression through in-game systems.

Interaction includes elements that relate to interaction on a level similar to Game Feel [9] i.e. how a user is performing and perceiving their interaction. This includes input, input mapping, feedback, and presentation patterns. These themes influence the way the player interacts with and perceives the story. This construct focuses on how the game allows the player to interact with the narrative. It provides them with information regarding their abilities to perform interaction, in addition to the results of their interactions with the narrative.

User Experience refers to cognitive considerations relevant to the narrative experience including player reasoning and expectations, metaknowledge, and personal, player defined goals. These cognitive considerations are subject to individual differences as well as psychological and social factors.

4   Conclusion and Future Work

This paper presented a brief overview of a study to identify interaction patterns of 18 narrative driven video games (see Fig. 1). The results were used to construct an interaction model, serving as a step towards establishing a taxonomy for describing and comparing interaction in interactive narratives. We chose to focus the model on story progression, a central concern for an interactive narrative experience. In addition, it was chosen to focus on goal oriented interaction and target observable interaction patterns meant to guide the player through the story. The model is not a holistic one and does not include all the various elements needed to fully describe the player experience and other facets of interaction. This limitation will be addressed in future work.

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