Novella: An Authoring Tool for Interactive Storytelling in Games

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Abstract. This research focuses on authoring tools and narrative models for interactive storytelling, in particular for video games. Specifically, it looks at developing a genre-independent model of interactive narrative for games, implementing such a model into an authoring tool, and identifying the impact of various interface paradigms on the authoring experience and resulting narratives.

Keywords: Hypertext · Narrative Modeling · Interactive Narrative · Authoring Tools · User Experience.

Overview & Research Questions

This research is being conducted at Bournemouth University as part of a PhD focusing on authoring tools for digital storytelling. It is a combination of narrative theory meshed with authoring tool development and experimentation. I am currently around ten months into the degree as of this submission, and when the conference runs, 14 months.

We are trying to answer how interactive narrative can be modelled in a genre-agnostic way such that it is suitable for structural analysis and development. We are also exploring how a developed model can be implemented in an effective author-friendly tool. Additionally, we are investigating the poetic impact that varying types of interface paradigms have on the authoring experience and the resulting narrative as to better understand the effects of design decisions.

While this project is looking at interactive narrative on the whole, there is a special interest in the domain of video game narrative in particular. The outcomes of this PhD are expected to be a new model of interactive narrative that is able to capture the nuances of storytelling in video games, a well-refined authoring tool implementing such a model, as well as an understanding of the impact that various interface paradigms have on the authoring experience and resulting narratives.

Narrative Model

We have developed a narrative model that targets video game stories. Our initial research [5] had us explore existing models of interactive narrative, both

game-specific and not. The observations made in this analysis provided us with a clear understanding of previous approaches and techniques. As part of the analysis, we had applied various models to narratively simple[1] and comparatively complex[2] games to see which areas were able to be represented and which faced difficulties. The most influential in our analysis were a couple of Proppian variations [3,4], Aarseth's model [1], the CANVAS project [6], and Bernstein's hypertext patterns [2]. These observations of technique and gaps were crucial in the design of our model, as well as much experience playing games to identify areas of narrative that may be difficult to capture.

Our model's primary contribution was in the representation of narrative elements within video games that can be discovered, observed, or experienced – *Discoverable Narrative*. For example, item descriptions, collectable letters, findable books, mechanics as metaphor, and so on. Our solution consisted of a four-dimensional matrix that when combined could represent these abstract narrative elements. Fig. 1 explains the different elements of the matrix. We plan to refine and update the model to better define it in terms of data. It has been implemented in its current form as the base for our own authoring tool.

Tangibility	Tangible Text attached to an in-game object.	Intangible Text **not** attached to an in-game object.
Functionality	Narrative Primary purpose is for narrative.	Mechanical Primary purpose is **not** for narrative.
Clarity	Explicit Clearly and well defined.	Implicit Abstract and interpretative.
Delivery	Active Requires interaction to be consumed.	Passive Is observed or experienced regardless of direct interaction.

Fig. 1: Discoverable narrative matrix of our model.

Authoring Tool

We have began development on our own authoring tool which contains an implementation of our model at its foundations. The tool will continue development, especially as usability and impact experiments take place. Regardless of being a working prototype, the developmental level is already quite mature. Its interface can be seen in Fig. 2.

Prior to development of this authoring interface, we undertook a detailed study of HCI and UX principles to better create an informed design. Notable sources include Nielsen's Usability Heuristics [7] and the Laws of UX[3]. Our tool

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[1] Portal, Valve Corporation, 2007

[2] The Stanley Parable, Galactic Cafe, 2013

[3] `https://lawsofux.com` by Jon Yablonski. Many of the laws are grounded in research, and the few that are not are widely accepted heuristics.
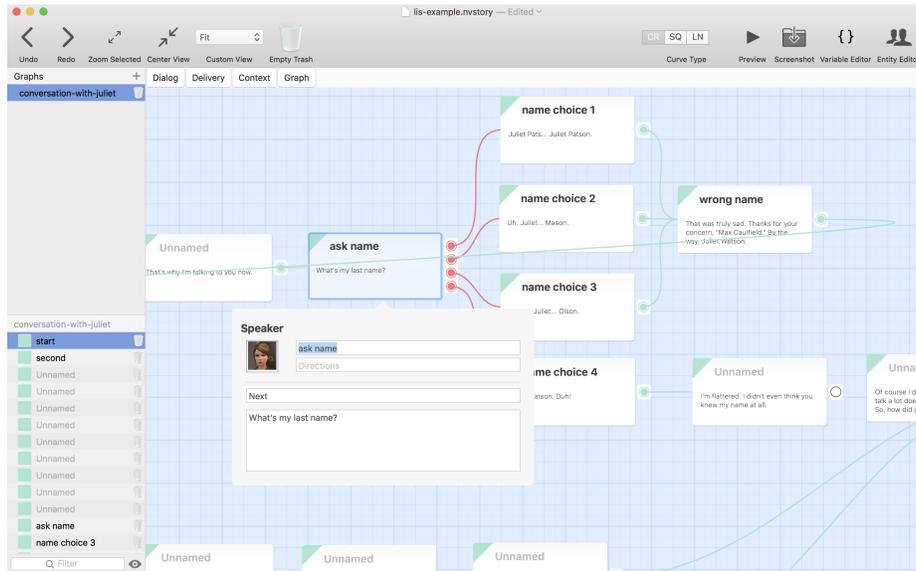
Fig. 2: The main interface of the authoring tool.

has a large focus on UX design. The principles and techniques learned during reading and a meta-analysis of existing tools have been largely implemented in our tool's UI design and authoring flow.

We opted for a node-based graph for story visualization and editing as our analysis showed it to be an efficient and reliable method, as well as the most prominent in existing tools, when displaying interconnected data. Much thought has gone into UX and interface design, mostly for the graph, to help reduce cognitive friction for authors using the system. For instance, the distinct coloring of node types, highlighting paths of selected nodes, and so on. We have also tried to reduce UI clutter where possible to further mitigate cognitive friction. For example, the content of our nodes are edited through non-modal popup dialogs that can be easily raised and dismissed, and optionally converted to floating windows. Similarly, features that are less commonly used than the main graph, such as variable editors, entity editors, and story previewing, are hidden in the toolbar until requested by the author.

We have developed this authoring tool as we would like to explore UX flows and designs that are not present in existing systems. We also plan to run experiments comparing the impact on the authoring experience of other UX approaches compared to our own.

Next Steps

We intend to continue refining our narrative model to better define video game narrative. This is a continual process, although we would like to largely finalize the model by next year.

Development of the tool will likewise continue until ready for experimentation. We plan for initial usability experiments experiments to run shortly that will allow us to refine the UX and interface design based on expert user feedback.

To better understand the impact on authoring of existing systems, we intend to run multiple experiments pinpointing specific areas of the authoring experience (primarily surrounding UX and interface presentation in order to discover the impact they have). These studies are still being designed. These experiments would also include our own system as to compare the impact of our own designs relative to existing works.

References

1. Aarseth, E.: A narrative theory of games. In: Proceedings of FDG '12. pp. 129–133. ACM (2012)
2. Bernstein, M.: Patterns of hypertext. In: Proceedings of HT '98. pp. 21–29. ACM (1998)
3. Bostan, B., Turan, O.: Deconstructing game stories with propp's morphology. system **17**, 18 (2017)
4. Brusentsev, A., Hitchens, M., Richards, D.: An investigation of vladimir propp's 31 functions and 8 broad character types and how they apply to the analysis of video games. In: Proceedings of IE '12. pp. 2:1–2:10. ACM (2012)
5. Green, D., Hargood, C., Charles, F., Jones, A.: Novella: A proposition for game-based storytelling. In: Narrative and Hypertext 2018. ACM (July 2018)
6. Kapadia, M., Frey, S., Shoulson, A., Sumner, R.W., Gross, M.: CANVAS: Computer-assisted narrative animation synthesis. In: Proceedings of SCA '16. pp. 199–209. Eurographics Association (2016)
7. Nielsen, J.: Enhancing the explanatory power of usability heuristics. In: Proceedings of the SIGCHI Conference on Human Factors in Computing Systems. pp. 152–158. CHI '94, ACM (1994)