Shelley's Heart: Experiences in Designing a Multi-Reader Locative Narrative

Alexander Jones
Creative Technology
Bournemouth University
ajones3@bournemouth.ac.uk

Brad Gyori
School of Journalism, English and
Communication
Bournemouth University
bgyori@bournemouth.ac.uk

Charlie Hargood
Creative Technology
Bournemouth University
chargood@bournemouth.ac.uk

Fred Charles
Creative Technology
Bournemouth University
fcharles@bournemouth.ac.uk

Daniel Green
Creative Technology
Bournemouth University
dgreen@bournemouth.ac.uk

ABSTRACT

Locative Narratives tie elements of the narrative to physical locations that users must visit in order to experience. While single reader locative stories and multiplayer locative games are increasingly common, the intersection of these, multi-reader locative narratives, are much less common. This work will analyse prior works of Locatives Narrative and Multi-User Locative Games in order to develop a model to describe Multi-Reader Locative Narrative and present the design for *Shelley's Heart* (an in-development multi-reader locative narrative) in the terms of this model.

CCS CONCEPTS

• **Human-centered computing** → **Hypertext/hypermedia**;

KEYWORDS

Interactive Narrative, Games Design, Locative Narrative

1 INTRODUCTION

Locative Narratives are a storytelling medium that makes use of location-based technologies such as the Global Positioning System (GPS) to tie sections of its narrative to locations in the real world so that users must physically visit the relevant coordinates to experience sections of the narrative. This works in a manner similar to the Locative Mobile Game "Pokemon Go"[1] which ties Pokemon to real life locations and challenges users to visit said locations in order to catch the prior mentioned Pokemon.

This paper focuses on Co-Presence within Locative Narratives; Co-Presence refers to a situation in which two or more users are connected to the same system and can in some way influence one another's experiences within that system. To provide an example of Co-Presence and to remain consistent, within the Locative Game "Pokemon Go" users can place their captured Pokemon within Gyms and these Pokemon will then appear within that Gym for other users to fight.

To explore Co-Presence within Locative Narratives an original linear locative narrative - Shelley's Heart - is being adapted into a Multi-Reader Branching Locative Narrative. The narrative is set in St. Peter's Church which is the final resting place of Mary Shelley and her husband's heart, it follows modern reincarnations of herself and her friends as they confront their monsters.

To effectively develop Shelley's Heart into a locative narrative that demonstrates co-presence this paper will propose a model to describe the influences users can exert on one another's experience of the narrative, this model will be used to describe the current design of the Co-Present Locative Narrative version of Shelley's Heart, and lastly an account of the authoring process will be provided so that it can be contrasted to the development of Single-Reader Locative Narratives.

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[1]Pokemon GO, Niantic, 2016

2 BACKGROUND

Several Locative Narratives have been developed over the years; "Hopstory"[16], "RIOT!"[5], "Media Portrait of the Liberties"[15], "Viking Ghost Hunt"[14], "Snow White is Missing"[9], and "Tiree Tales"[12]. These projects described the authoring process for Locative Narratives, provided data demonstrating these narratives' positive reception and showed that Locative Systems can function as an effective medium for narrative.

While the prior mentioned Locative Narratives are all single-user experiences the majority of Locative Games are multi-user experiences; "Pirates!"[4], "ArQuake"[19], "Can You See Me Now?"[2], "Uncle Roy All around you"[3], "Bill"[6], Tycoon[6], "Feeding Yoshi"[1], "Capture the Flag"[7], "Hitchers"[8], and "Barabarossa"[11] are all examples of multi-user Locative Games. These Multi-User Locative Games, like the Single-User Locative Narratives, were received positively which shows that Locative Systems can also function as an effective medium for Multi-User experiences.

Despite the prior mentioned success of Single-User Locative Narratives and Multi-User Locative Games there hasn't been thorough exploration of Multi-User Locative Narratives, one that is built on the foundations of what has been learnt from the prior mentioned fields.

Millard proposed a model of structures that occur within Locative Narrative[13], specifically, the model proposed three primary structures; Canyon's, Deltas, and Plains. Hargood proposed an extensions to this model that consisted of several patterns that can exist within the structures of Locative Narrative[10]; Parallel Threads, Gating, Concurrent Nodes, Alternative Nodes, Foldback, Phasing, and Unlocking. The patterns relevant to this work are Parallel Threads, Alternative Nodes, and Foldback.

Packer[17] proposes a writers toolkit for the development of Locative Narrative which consists of several types of considerations; Dealbreakers, Pragmatics, and Aesthetics. Dealbreakers describe a set of requirements that if not adhered to mean a user would not read a locative narrative or they would not finish it, Pragmatics described how you could best utilize the environment of a location to direct a user through a narrative, and Aesthetics described how you could form a connection between the locations you've tied the narrative to and the themes of your narrative.

This selection of research provides a foundation for developing a Locative Narrative and thereof it has been used to inform the development of Shelley's Heart's Locative Narrative Design. However this work doesn't provide a foundation for Co-Present element of the Narrative which is what separates Shelley's Heart from other Locative Narratives, in order to address this research relating to Co-Presence will be used to supplement.

Spawforth has examined Co-Presence in Video Games in order to develop a taxonomy intended to describe the interactions between users and he has proposed several concepts for Co-Present Locative Narratives [18]. Spawforth's taxonomy however focuses on how interactions are perceived by the participating users, it doesn't currently describe how these interactions are effecting the narrative and so it'll need to be expanded in order to accommodate this.

3 EXTENDING MODELS OF CO-PRESENCE

As previously mentioned Spawforth[18] provides a taxonomy that can describe interactions between users but this extensions to Spawforth's taxonomy explores Co-Presence through the lens of "influence", specifically, how one user's actions are translated to other users within the system. Influence is composed of several elements; Influence Selection, Influence Timing, Influence Target, and Influence Method.

Influence Selection refers to the method used by the narrative system to determine which user or users will be given the ability to influence another user's experiences. There are two types of Influence Selection in the form of Autocratic Influence and Democratic Influence; Autocratic Influence is when a single user's interactions influence other user's experiences while a Democratic Influence is when several user's combined interactions influence other user's experiences. Autocratic influence is typically assigned via a milestone; Being the first or last to do something. Democratic Influence is typically assigned by the number of people that have done something; The majority or minority choice.
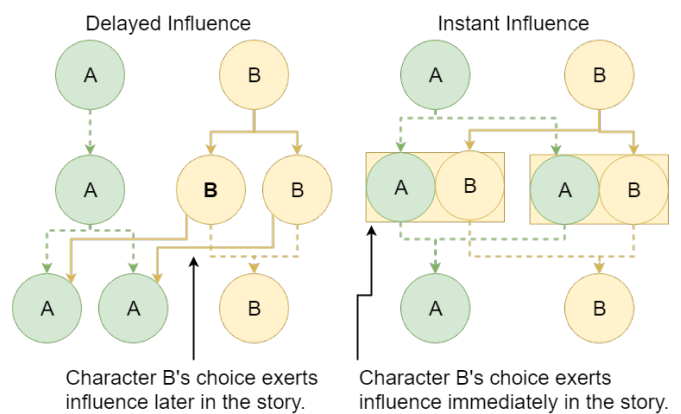

Figure 1: Delayed Influence vs. Instant Influence

Influence Timing refers to the amount of time that passes between an interaction occurring and its influence being experienced, specifically, it refers either to a Instant Influence or a Delayed Influence. Instant Influence describes when the Influence exerted immediately effects the experience while Delayed Influence describes when time passes between

the interaction and the influence being experienced. This is demonstrated diagrammatically in figure 1.

Influence Target refers to the element of the narrative that is being influenced, specifically, it describes if the influence being exerted by a user will alter the Fabula or the Discourse of the narrative. Fabula refers to the events of the narrative and the chronological order they occur in while discourse represents how these will be presented to the user. This is demonstrated diagrammatically in figure 2.
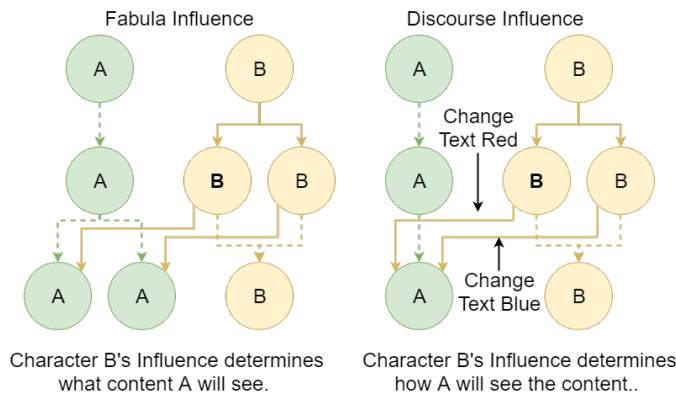

Figure 2: Fabula Influence Versus Discourse Influence

Influence Method refers to how an interaction is implemented within the narrative; this can be as a Guiding Influence or as a Generative Influence. A Guiding Influence is one that restricts which options other users can select and therefor guides them through a narrative while a Generative Influence instead adds entirely new content to the story.

4 SHELLEY'S HEART

The story of Shelley's Heart follows four protagonists; Mary, Byron, John, and Percy. The prior three are modern reincarnations of Mary Shelley, Lord Byron, and John Keats respectively while the later is the ghostly manifestation of Percy Shelley who has been bound to this earth until he reclaims his heart. The story is spurred to begin due to a chance encounter between the spectral Percy and Mary which provides the motivation for Mary to gather Byron and John in order to seek Percy out within St. Peter's Church. Each of the four protagonists have separate journeys within the church's yard; At points the cast will intersect, they'll be faced by ghosts of the past, and ultimately they'll have to face Mary Shelley's monster. During their journeys the readers of each protagonist will be able to make decisions that alter the story for themselves but they'll also be able to make decisions that'll affect future readers of the other protagonists.

Shelley's Heart is being implemented within Storyplaces [10] which is a hypertext based Locative Narrative tool, and

for the purpose of creating a Co-Present Locative Narrative additional functionality is being developed for the platform.

Authorial Process

Collaboration between the technologists/games designers and the author of the original Shelley's Heart narrative underwent a similar process of many interdisciplinary research projects in that reaching a shared vocabulary and learning from each others' expertise dominated much of the early process. The original story was already a locative narratives with shifts in perspectives between characters, making it a natural fit for experimentation with co-presence. The author notes as follows:

> "The original design of Shelley's Heart included many opportunities to shift between narrative perspectives. As with the classic film Rashomon (Akira Kurosawa, 1950) this allowed participants to discover how different characters view the same dramatic moment in very different ways."

The concept of understanding different characters perspectives and actions aligning with the reader understanding the experience and action of other readers. However, we were keen to experiment not just with the experience of other readers but their agency, and the ability of a reader to become aware of others' interaction with the plot. This necessitated changes which led to challenges similar to many interactive narratives such as the problem of coherence and agency, and maintaining manageable narrative structure in the face of branches. These issues were solved with a combination of careful rewriting, and use of common patterns such as foldbacks and alternative nodes. Whether content was essential for the plot or might be altered to reflect a choice often impacted where these choices came, often with core content covered in a later choice if missed in an earlier one:

> "For instance, all of the story-paths have some nodes that are skippable and some that are crucial for comprehension of the plot. This determined how I laid out the player choices within each individual path ... at the end of Percy 2A and Percy 2B, the player chooses only between Percy 3A and 3B. This has to do with offering an earlier choice (between 2A and 2B) because either one of those (but NOT both) is skippable."

The author also notes that the introduction of parallel threads to the story has increased the demand on writing not just from the perspective of content but also character design. Where as the original linear story had a single clear protagonist now there are four, and "less dimensional" characters

have had to become more "rounded". Finally the exploration of co-presence as a use within the narrative remains experimental in that both author and researcher remain unsure of its likely impact on the narrative. This has meant its initial implementation (and consequently affect) is modest, but hopefully substantial enough to explore its impact.

Structural Design

The over all structure of Shelley's Heart can be seen in figure 3. Shelley's Heart, in terms of the CDP model, makes use of a series of parallel Canyon structures with a light implementation of a Delta structure in order to enable a degree of user agency. In the conversion of Shelley's Heart into a Co-Present Locative Narrative a Parallel Threads pattern was employed with each character having paths that run along one another, the narrative like before includes fold-back patterns and Alternative Nodes but now some of these have been re-purposed into providing moments of Co-Presence.

During the development of Shelley's Heart into a Co-Present Locative Narrative several things had to be considered; The feasibility of producing new content, the compatibility of new content with the existing narrative, and what suited the Co-Presence the best. All of these considerations were made when designing the following Co-Present interactions;

Character	Selection	Time	Target	Method
Percy 1	Auto First	Instant	Fabula	Guidance
Percy 2	Auto First	Delayed	Discourse	Guidance
John 1	Auto Last	Instant	Fabula	Guidance
John 2	Auto Last	Delayed	Discourse	Guidance
Byron 1	Demo Maj	Instant	Fabula	Guidance
Byron 2	Demo Maj	Delayed	Discourse	Guidance
Mary 1	Demo Min	Instant	Fabula	Guidance
Mary 2	Demo Min	Delayed	Discourse	Guidance

Influence Methods for each of these interactions were selected so that there effect on how a user experiences Co-Presence could be observed, specifically, this is why each of the interaction uses a different form of Influence Method. Currently these aren't assigned with suitability in mind as research on how these influence methods effect the narrative is needed in order to make such a calculation, instead the Influence methods were assigned randomly.

Due to the previous design of Shelley's Heart all of the Influence Timings for Fabula altering interactions had to be Instant, this is because implementing Delayed Fabula influence would have required the restructuring of the entire narrative while only using Instant Fabula Influence fit into the current structure of Shelley's Heart. To compensate for this, and to ensure the effects of Delayed Influence were
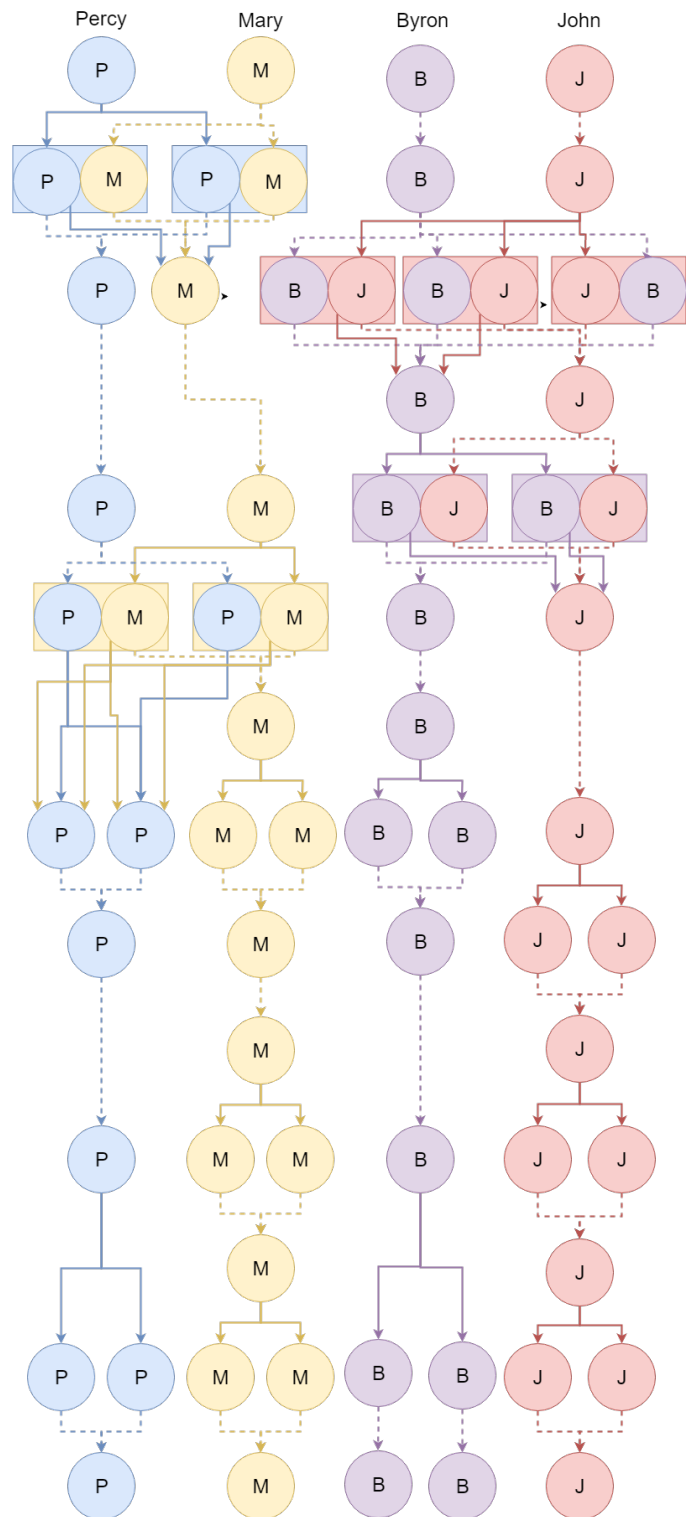

Figure 3: Structural Design of Shelley's Heart

explored to an extent, it was decided that interactions that affected Discourse would be designed to exert Delayed Influence.

5 CONCLUSIONS AND FUTURE WORK

The aim of this work is to develop a model for describing the influence between users in multi-user narrative with a specific emphasis on locative narrative as they tend to be set in public spaces, it is to apply such model of influences to a Co-Present Narrative in the form of Shelley's Heart, and it is to use that model to contextualize the data gathered from people experiencing Shelley's Heart. This being done to firstly provide a taxonomy for discussing this type of narrative, specifically, it is looking to develop a conversation about how to best utilize the influences between players in order to better understand co-presence in locative narrative going forward.

In future work we intend to evaluate our approach to co-presence in Shelley's Heart through a user study with participants trying different paths. Through observational study of the readers and subsequent interviews we hope to understand whether readers were aware of the agency of other readers in the story, and whether there was any resulting effect on the reader's experience.

Currently all the interactions within Shelley's Heart are Asynchronous therefore future work could include a synchronous Co-Present Locative Narrative that encourages users to play separate perspectives simultaneously, and it could be used to explore how Co-Influence effects are different in a synchronous or asynchronous system. Similarly while only guiding influence is used in Shelley's Heart future work could include the exploration of how generative influence effects a narrative and how you'd design a narrative while accounting for the variation that could occur in a generative narrative if at all.

REFERENCES

[1] Marek Bell, Matthew Chalmers, Louise Barkhuus, Malcolm Hall, Scott Sherwood, Paul Tennent, Barry Brown, Duncan Rowland, Steve Benford, and Mauricio Capra. 2006. Interweaving mobile games with everyday life. In *Proceedings of the SIGCHI conference on Human Factors in computing systems*. ACM, 417–426.

[2] Steve Benford, Andy Crabtree, Martin Flintham, Adam Drozd, Rob Anastasi, Mark Paxton, Nick Tandavanitj, Matt Adams, and Ju Row-Farr. 2006. Can you see me now? *ACM Transactions on Computer-Human Interaction (TOCHI)* 13, 1 (2006), 100–133.

[3] Steve Benford, Martin Flintham, Adam Drozd, Rob Anastasi, Duncan Rowland, Nick Tandavanitj, Matt Adams, Ju Row-Farr, Amanda Oldroyd, and Jon Sutton. 2004. Uncle Roy All Around You: Implicating the city in a location-based performance. *Proc. Advances in Computer Entertainment (ACE 2004)* 21 (2004), 47.

[4] Staffan BjÃűrk, Jennica Falk, Rebecca Hansson, and Peter Ljungstrand. 2091. Pirates! Using the Physical World as a Game Board. In *Interact*, Vol. 1. 423–430.

[5] Mark Blythe, Josephine Reid, Peter Wright, and Erik Geelhoed. 2006. Interdisciplinary criticism: analysing the experience of riot! a location-sensitive digital narrative. *Behaviour & Information Technology* 25, 2 (2006), 127–139.

[6] Gregor Broll and Steve Benford. 2005. Seamful design for location-based mobile games. *Entertainment Computing-ICEC 2005* (2005), 155–166.

[7] Adrian David Cheok, Anuroop Sreekumar, Cao Lei, and Le Nam Thang. 2006. Capture the flag: mixed-reality social gaming with smart phones. *IEEE Pervasive Computing* 5, 2 (2006), 62–69.

[8] Adam Drozd, Steve Benford, Nick Tandavanitj, Michael Wright, and Alan Chamberlain. 2006. Hitchers: designing for cellular positioning. *UbiComp 2006: Ubiquitous Computing* (2006), 279–296.

[9] Charlie Hargood, Ben Hicks, Fred Charles, S Lynch, and Wen Tang. 2017. Snow White is Missing: An Interactive Locative Story For Dementia Patients. (2017).

[10] Charlie Hargood, Verity Hunt, Mark J Weal, and David E Millard. 2016. Patterns of sculptural hypertext in location based narratives. In *Proceedings of the 27th ACM Conference on Hypertext and Social Media*. ACM, 61–70.

[11] Vlasios A Kasapakis. 2016. *Pervasive Role Playing Games: Design, Development and Evaluation of a Research Prototype*. Thesis.

[12] David Millard and Charlie Hargood. 2017. Tiree tales: a co-operative inquiry into the poetics of location-based narratives. (2017).

[13] David E Millard, Charlie Hargood, Michael O Jewell, and Mark J Weal. 2013. Canyons, deltas and plains: towards a unified sculptural model of location-based hypertext. In *Proceedings of the 24th ACM Conference on Hypertext and Social Media*. ACM, 109–118.

[14] Katsiaryna Naliuka, Tara Carrigy, Natasa Paterson, and Mads Haahr. 2010. A narrative architecture for story-driven location-based mobile games. In *International Conference on Web-Based Learning*. Springer, 11–20.

[15] Valentina Nisi, Ian Oakley, and Mads Haahr. 2008. Location-aware multimedia stories: turning spaces into places. *Universidade CÃątolica Portuguesa* (2008), 72–93.

[16] Valentina Nisi, Alison Wood, Glorianna Davenport, and Ian Oakley. 2004. Hopstory: An interactive, location-based narrative distributed in space and time. In *International Conference on Technologies for Interactive Digital Storytelling and Entertainment*. Springer, 132–141.

[17] Heather Packer, Charlie Hargood, Yvonne Howard, Petros Papadopoulos, and David Millard. 2017. Developing a WriterâĂŹs Toolkit for interactive locative storytelling. (2017).

[18] Callum Spawforth and David E Millard. 2017. A Framework for Multi-participant Narratives Based on Multiplayer Game Interactions. In *International Conference on Interactive Digital Storytelling*. Springer, 150–162.

[19] Bruce Thomas, Ben Close, John Donoghue, John Squires, Phillip De Bondi, and Wayne Piekarski. 2002. First person indoor/outdoor augmented reality application: ARQuake. *Personal and Ubiquitous Computing* 6 (2002), 75–86.