Storytelling in 3D

Designing Interactive Digital Narratives

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Introduction

Digital storytelling is the inheritor of a tradition that goes back to ancient times, from oral to print, to more contemporary web-based forms. While the modalities of narrative have changed over the centuries, the purposes for its creation have remained surprisingly similar: to provide a means to make sense of the society in which we live as well as the self within that society, to communicate something of ourselves, and to find meaning in the texts of others (Puckett, 2018). Digital storytelling has become a rich source for narrative, from the advertising industry to cultural heritage; thus, when narrative is talked about today, it is through a plethora of new mediums and new forms of textuality, from online videos to interactive fiction, to audio tours.

3D: Information vs. Narrative Spaces

When considering 3D in terms of an interactive space for storytelling it is arguably less developed than other modalities. Here, 3D is defined by both models of digitised individual objects as well as computer graphic reconstructions of large-scale environments, i.e., virtual worlds. Typically, 3D models are presented in more of an information rather than a narrative space. Sketchfab and other such platforms permit notes in the form of hotspot labels to augment the model as a means of annotative enrichment. 3D models of individual objects can also be found in museum collections together with their associated metadata, but this information is not typically contained within the 3D viewing environment. Similar is the case for most of the 360o virtual tours which were mass produced in the first year of the COVID-19 pandemic; for those, although the 3D environment is central to the experience, they typically only include little or even no contextual information, while also not allowing - due to their low quality - the close exploration of artefacts and works of art.

In looking for instances in which 3D models are utilised in storytelling, these typically take the form of animations, particularly of virtual worlds, in which there is a narration over the camera view guiding the user through the space. There are far fewer implementations - either in the form of prototypes that allow the real-time exploration of 3D models (see for example the software prototype VSim;

Snyder, 2014) or bespoke solutions (see for example The Dream of the Rood; Leoni et al., 2013) that privileges the 3D model as central to the story being told and from which to frame a narrative. Smithsonian's Voyager Story is, however, one such narrative-oriented platform.

Voyager Story

Voyager Story, part of a larger 3D digitisation ecosystem developed by the Smithsonian Institution[1], provides a flexible framework and intuitive editing environment for multiple types of digital content, as well as the modalities of designing engagement between the model and the accompanying narrative. Voyager Story aims to simplify the 3D narrative process through:

1. Annotation Labels: Expandable hotspots as spatially aware annotation;
2. Articles: HTML-based pages with text and multimedia that can either overlay the 3D model or be situated to the side of it;
3. Guided Tours: A flexible combination of annotation, articles, camera movements and a set of analysis features, such as alternative material shaders, light settings measuring tape and slicer tool (Smithsonian, 2022).

Voyager Story in the PURE3D Infrastructure

Given its robust capabilities, Voyager Story was chosen to design a 3D narrative as part of the PURE3D Project[2], which is building an infrastructure for the publication and preservation of 3D scholarship[3]. While PURE3D has been working with a variety of models from project partner institutions, the first model to reach testing stage is one from the project Contested Memories[4]. This project has utilised a computer graphic reconstruction of the battlefield to better understand the events of 25 April 1916 in which a small contingent of 17 Irish soldiers held off two battalions of some 1,750 British soldiers in the first major battle of the Easter 1916 Rising. Rather than encompass the whole of the battlefield in one Voyager instance, a decision was taken to create multiple instances, allowing rich stories to be told through the battle's four key locations. As such, 25 Northumberland Road, the first building encountered by the British, was chosen for prototyping and testing (Figure 1).

In Voyager Story, three guided tours of the building were created in which the pre-battle, battle, and post battle events, locations and persons are presented using set camera views inside and outside the building, annotation labels set at key locations on the building with short expandable text, and articles containing longer textual descriptions enriched with relevant multimedia content and documentary sources (Figure 1). The challenge was to design both linear and non-linear forms of segmented interaction that conveyed a cohesive and neutral overarching narrative about the building,

[1] https://3d.si.edu/

[2] https://pure3d.eu/

[3] PURE3D is funded by the Platform Digitale Infrastructuur - Social Sciences and Humanities (PDI-SSH), and the consortium consists of Two national Dutch infrastructures (CLARIAH: Common Lab Research Infrastructure for the Arts and Humanities | DANS: Data Archiving and Networked Services) as well as six partner institutions/projects to inform requirements and test the resultant infrastructure: Contested Memories, The Battle of Mount Street Bridge (Maastricht University), Lighting the Darkness (Netherlands Mining Museum), Modern Art in 3D (Museum Van Bommel Van Dam Museum), Rembrandt's Birthplace (Leiden Heritage Office), Vlooienburg Jewish Amsterdam (4D Research Lab at University of Amsterdam), and Maastricht 1748 (Municipality of Maastricht).

[4] https://mountstreet1916.ie/

its combatants and the timeline of events that occurred before, during and after the hours of active conflict. This implementation utilised multiple modes which borrow from other narrative structures, such as written prose, film, and webpages. These modes include:

1. Textual: through its online tours the story presents a clear beginning, middle, and end of the events located in and around the building;
2. Movement: provide narration through dynamic camera movements highlighting key vantage viewpoints both inside and outside the building;
3. Hypertext: via hyperlinks (from annotation labels to articles) both within Voyager as well as to resources on the WWW;
4. Interactive: allowing for multiple navigation paths via tours, annotation, and articles.

These modes were combined within the Voyager information space, thus giving users great autonomy and control in how they 'receive' the story, without losing sight of the 3D model as the central pillar of the narrative. Hence, the 3D model is the vehicle through which the story is told.

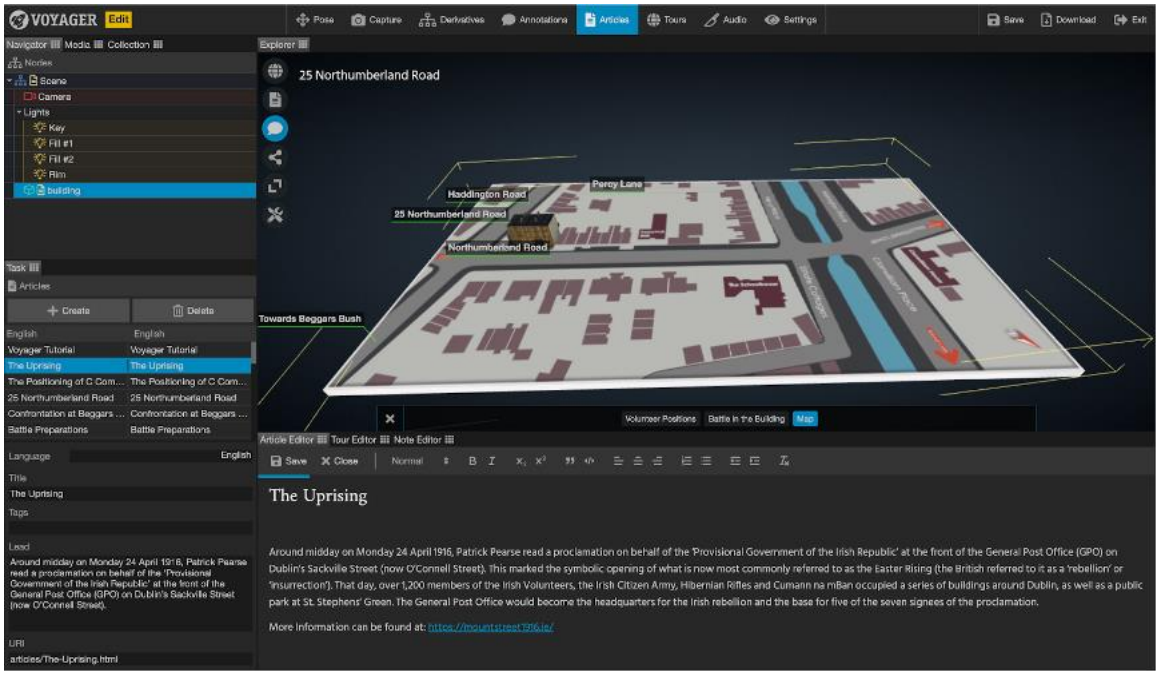

Fig. 1. Screenshot of the Smithsonian Voyager Story interface when designing the 25 Northumberland Road 3D Narrative (© PURE3D).

Feedback and Next Steps

First phase feedback on the 25 Northumberland Road implementation was gathered at an in-person focus group with six individuals who were familiar with the Irish history of the period, but not the battle itself, as well as an online survey, which was circulated to both focus group members and colleagues familiar with the longer-term project. Both took place in June 2022.

Just a small portion of this feedback is framed here through Europeana's (2022) seven suggestions for developing engaging digital storytelling, particularly for the cultural heritage sector:

1. Be Personal: Personal stories bring the past to life.

- Participants greatly appreciated the personal stories highlighted in the narrative and found

that they “bring history alive”.

2. Be informal but Expert: well-informed content that is playful and experimental.

- Participants appreciated that they could trust the neutral tone of the narrative voice. One respondent found the reference list given at the end of each tour “very helpful” and that it contributed to the trustworthiness of the content.

3. Tell Hidden Stories: Consider who is missing from the picture; try to give a voice to a range of people and communities.

- Participants appreciated the in-depth personal stories of both the Irish participants as well as a captain in the British army who was killed during the first minutes of the battle. What they missed, however, was a narrative which highlighted the story of one or more enlisted soldiers in the British army.

4. Illustrate your point: Breaking up the text with visual and audio material, and building in time to reflect on it.

- One respondent especially valued the short audio clips from Irish combatants recorded some 50 years later: “For me, the oral presentations contained in Voyager were what I enjoyed most”. One participant felt the narrative was a bit too dense and suggested “more breaks so I could digest what you are telling me before moving on”.

5. Signpost your journey: Keep the navigation simple, so the visitor knows where they are at any point.

- Some participants found navigation at first difficult to grasp and required help to start with using the interface. Going back and finding information was a challenge at times because there were “too many buttons”.

6. Be specific: Proceed from details to the big picture, rather than the other way round.

- Participants did not have major challenges in processing the amount of information that was presented. They indicated that the Voyager experience helped their overall understanding of the battle.

7. Be evocative: Invite the viewer to place themselves within the scene

- Participants felt that there was some amount of immersivity, however, one participant felt that there was a lack of interaction: “[I was given] a great vantage point at one stage but I would have liked to feel I was actually standing there.”

Over the next few months, the PURE3D team will implement the suggestions from the focus group and survey to prepare for a second, wider round of feedback in the autumn, which will better inform strategies for creating public-focused digital narratives. Feedback will also contribute to the development of the other buildings in the battle, as well as future training for PURE3D project partners in the creation of their own Voyager narratives.

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Conflict of Interests Disclosure

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