

It Takes a Village: Building an Infrastructure for 3D Scholarly Editions

Papadopoulos, Costas

k.papadopoulos@maastrichtuniversity.nl
Maastricht University, Netherlands, The

Schreibman, Susan

susan.schreibman@gmail.com
Maastricht University, Netherlands, The

Gillikin Schoueri, Kelly

k.gillikinschoueri@maastrichtuniversity.nl
Maastricht University, Netherlands, The

Cope, Jamie

CopeG@si.edu
Smithsonian Institution

Blundell, Jon

BlundellJ@si.edu
Smithsonian Institution

Ogawa, Jun

htjk6513khhk@gmail.com
Center for Open Data in the Humanities, University of Tokyo

Nagasaki, Kiyonori

nagasaki@dhii.jp
International Institute for Digital Humanities, University of Tokyo

Introduction

The rationale for the creation and development of digital scholarly editions has been to use available technologies to present, analyse, and augment the text; to contextualise it, to illuminate it; at times to allow the public to collaborate in its creation; to view the text in terms of patterns demonstrating connections not easily visible to the human eye. In short, to create a knowledge site for research and dissemination (Apollon et al. 2014; Sutherland 1997; Driscoll and Pierazzo 2016; Pierazzo 2015). Typically, we think of the text at the centre of these editions in semantic terms: a novel, a poem, a document. But what happens when we think of the text as a 3D model: be it an individual object (e.g., a sculpture or an artefact) or a complex scene (an archaeological site or a city). Of course, we are not the first to describe texts this way. In 1999 DF McKenzie described the panoply of objects that could be open to the kinds of intensive bibliographical study (transmission, production, and reception) that textual scholars have traditionally reserved for print and manuscript traditions, ‘as verbal, visual, oral and numeric data’ (McKenzie 1999, 13).

Thus, for the infrastructure under development by the PURE3D project, the 3D model is the focal point for the editions being created: annotated and glossed multimodally (text, images, video as well as other models) with the apparatus displayed within the same information space as the model itself. Different 3D viewers are utilised to serve different audiences: from more publicly focussed narrative-based viewers (e.g., Smithsonian Voyager developed by the Smithsonian) to more scholarly information-based viewers (developed by PURE3D). Viewers reside within an infrastructure that also provides a preservation layer so that all the assets of the edition (as well as preservation versions of the models) can be securely stored for long term use and reuse.

In the title of this panel, we write that it takes a village to create the infrastructure. The collaboration spans three continents, with the main project team in The Netherlands, utilising a viewer developed by The Smithsonian Institution (Washington DC), being informed by colleagues creating their own editions in Japan, in addition to a range of heritage institutions creating editions in The Netherlands.

This panel will explore the various aspects of what is involved, not only in conceiving and building the infrastructure, but in creating the 3D editions and developing the viewers that allow stories to be created around them. It will also explore issues of training, also a key to the development of the infrastructure, as the requirements for creating 3D DSEs, conceptually, methodologically, and technically, are quite different from what we have been training for over the past 20+ years for more traditional text-based editions.

Paper 1: What is a 3D Digital Scholarly Edition?

Susan Schreibman, Maastricht University

In 2016 Patrick Sahle advocated that Scholarly Digital Editions not be restricted to literary texts but rather ‘cover all cultural artefacts from the past that need critical examination in order to become useful sources for research in the humanities’ (Sahle 2016, 22).

Thus the goal of these editions is to move beyond how we typically interact with 3D models (for example on Sketchfab or via museum databases) as ‘twirly objects’, albeit with metadata, to models that exist within a knowledge site, e.g., a Digital Scholarly Edition; what Derrida (Derrida and Prenowitz 1995, 10) and the earliest textual editors of web-based scholarship called the archive, what Deleuze and Guattari (1987, 4) called an assemblage, in which the textual and contextual are interwoven within the same viewing environment (Gabler 2010, 46) thus providing an environment for the communication of 3D scholarship to enjoy the same intellectual rigour as more traditional editions based on primary text-sources.

Several virtual world projects have followed the paradigm of what we call 3D Scholarly Editions, providing contextual information, in the form of in-world textual and multimedia annotations, including VSim (Snyder 2014, Sullivan and Snyder 2017), the Virtual Middletown Living Museum Project and The Visionary Cross Project. This paper will explore issues surrounding the creation and the sustainability of 3D scholarly editions, and hence the inspiration to create an infrastructure to lessen the burden (economically and intellectually) for editors wishing to create and sustain such scholarship.

Paper 2: Building an Infrastructure for 3D Scholarship

Costas Papadopoulos, Maastricht University

PURE3D, an infrastructure for the publication and preservation of 3D scholarship, funded by Platform Digitale Infrastructuur - Social Sciences & Humanities, is establishing a framework in which 3D scholarship and heritage will be published and preserved in the form of 3D Scholarly Editions (3DSEs) (Schreibman and Papadopoulos, 2019; Papadopoulos and Schreibman, 2019).

At the same time, emphasis is placed on the preservation not only of the 3D models, but of all of its associated information (e.g., annotations, apparatus etc.) following the FAIR principles. PURE3D is also developing models for the evaluation of 3D scholarship, aligning with the recent Declaration on Research Assessment (DORA) and The EU Agreement on Reforming Research Assessment.

The development of the PURE3D infrastructure is informed by six pilot partners, representing both academic researchers and heritage institutions, providing a range of 3D models from a collection of individual objects to more complex cityscapes. Following an iterative design thinking methodology, development is informed by workshops, focus groups, and training, which in turn, informs the conceptualisation and creation of 3D narratives. The goal of PURE3D is not to reinvent the wheel, but draw from successful attempts in infrastructure development, such as collaborating with The Smithsonian by implementing Voyager Story and Voyager Explorer as one of the 3D editing and viewing environments. This collaboration has also served to inform development of Voyager while expanding its community of practice. This paper will reflect on the collaborative process of development and will address opportunities and challenges.

Paper 3: At the Front End: The Smithsonian Voyager - Crafting Engaging Digital Experiences

Jamie Cope, Smithsonian Institution

Jon Blundell, Smithsonian Institution

Cultural heritage objects are rarely presented in a vacuum. In a physical museum great care is taken to display, provide context, and guide visitors through an educational experience. Online 3D viewing experiences should not be different: to provide a meaningful and memorable virtual visit, construction of narratives to provide users with multimodal contextualisation, interactivity, and affective experiences is equally important. To this end, The Smithsonian developed the Voyager suite of web components that provide authors and viewers of 3D narratives with the functionalities to develop and consume such experiences. Voyager is divided into two main components: Story, the content authoring interface and Explorer, the user-facing interface, which can support augmented reality viewing on compatible mobile devices. Voyager story enables users, including curators and content experts, to author 3D narratives by means of: 1) Annotation; 2) Articles; and, 3) Guided Tours.

In developing PURE3D, Voyager is one of the authoring/viewing components for developing 3D scholarly editions. Through this collaboration, Voyager had the opportunity to reflect not only on storytelling features but also on the kinds of audiences that could benefit from the platform as PURE3D works with a wide variety of stakeholders, not only museum curators - which have been the primary audience for Voyager Story, but also researchers, including architectural historians, archaeologists, art historians, and 3D modellers. This paper will present the narrative affordances of the Voyager suite and will reflect on the lessons learnt from the collaboration with multiple and diverse stakeholders and the PURE3D infrastructure.

Paper 4: Training the Community: Theoretical & Methodological Considerations

Kelly Gillikin-Schoueri, Maastricht University

Even if an environment is developed in which researchers, curators, and archivists can create 3DSEs, the conceptual underpinning of these editions is extremely different from other forms of knowledge creation, including creating metadata for 3D models (eg as part of an institutional database) to XML-based DSEs. Therefore, training is an integral part of the 3D infrastructure so that editors can curate annotations and apparatus in ways that directly

interact with the 3D model. Thus, as part of the PURE3D project activities, a series of iterative training modules for various stakeholder groups (including bachelor's students, public-sector heritage professionals and academics) have been developed utilising Smithsonian's Voyager with a two-fold objective:

1. To conceptualise 3D scholarly editions as a novel form of scholarly communication;

2. To teach competency in developing a 3D scholarly edition within Voyager Story.

The training materials have been developed through an interactive and collaborative design cycle. Learning how to use the software has been relatively easy to teach. But even for those who have a background in more traditional text-based editing, what has proved challenging is a change in mindset as to how to edit an edition in which the 'textual' centre is a 3D model which necessitates an annotative focus on place-based location originating from the physicality of the model. This paper will explore these challenges, as well as the solutions now part of the suite of training materials used, as well as future plans for making these materials publicly accessible.

Paper 5: The First Editions: Crafting Engaging Digital Experiences

Jun Ogawa, University of Tokyo

Kiyonori Nagasaki, University of Tokyo

Susan Schreibman, Maastricht University

This paper focuses on the intellectual, conceptual, and methodological decisions to be considered in constructing a 3D DSE. At present, there are some 20 editions within the PURE3D infrastructure using models as different as Buddhist statues, the Roman Imperial Fora, a battlefield in Dublin from the Easter 1916 Rising, a musical instrument called the Hurdy Gurdy, a Benin Bronze, a coal mining lamp, and a modern statue, and buildings from 18th century Netherlands, among others.

Despite the fact that these objects are so different in the physical world, within the context of the editing environment, in this case Smithsonian Voyager, they share common issues in narrating and annotating to create scaffolding around the 3D model appropriate to the audience the editor is targeting. As the 3D model maintains a central role in the edition, the narrative must begin and end with the spatiality of the object being annotated. This means that all the data included in the edition, even what we might consider background knowledge, needs, somehow, to be connected to a specific location on the model, in addition to issues present in more traditional editions, including what is selected for annotation and how it is communicated.

3D DSEs have the potential to open up spatial and temporal opportunities for new forms of scholarly communication foregrounding the material and sensorial within a 3D environment. These prototype editions have much to teach us about the opportunities for this exciting new form of scholarship, geared to a wide variety of audiences.

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