Facilitating Change:

The challenge of telling the stories of our past through technology

Alison Breese

This article aims to give some insight into the challenges I faced when completing a digital thesis, rather than the subject content itself. My digital thesis aimed to showcase archives and create new stories and experiences for the reader through different multimedia technology.[1] I will explain how I enabled accessibility of my research outside of academia, and the importance of cross collaboration and communication with people from multiple institutions, and the issues created by various policy and technological challenges.

In 2018 I undertook the challenge of a Masters of Arts at Otago University, part-time, around a full-time role as a Digital Archivist. My thesis topic focussed on the demise of the Dunedin underground toilets, which I had researched and studied for some years. I felt I could enhance this research with a more interactive thesis – a digital one. From the beginning, I wanted a virtual reality (VR) concept of "time travelling" back to the underground conveniences which have long disappeared in Dunedin. This was to enable readers to experience in a different way what it may have been like in the underground spaces and could further enhance my arguments around their accessibility in the past. I envisioned an interactive timeline where viewers could click on parts they wanted to learn about and not be constricted by how they read through the thesis. Most importantly, I wanted this to be accessible to the general public, outside of the academic walls of a University.

But how to do this and where to start? I googled a lot! I had to choose a platform that would meet my needs but also that would meet the postgraduate standards from a New Zealand University. Through my research I happened upon two PhD works which were both using the platform Scalar overseas. I emailed the two PhD candidates (Celeste Sharpe and Kate Nesbit), who in quick response, gave me great advice and extremely helpful suggestions for format approval and getting over the line for acceptance.[2]

I contacted several other New Zealand Universities to see if they had policies and procedures around digital only theses, with most responding they did not know of any ever submitted or being undertaken. I read a lot of overseas Universities digital policies, in particular from the United States, and received some advice from those University Libraries and Humanities staff.

With all this information (or lack of) I chose to present my thesis using the open source platform Scalar (https://scalar.me/anvc/scalar/), used by both Sharpe and Nesbit. Scalar is an open source authoring and publishing platform that is designed for authors to write long-form, born-digital scholarship online. Scalar enables its users to assemble media from multiple sources and juxtapose them with their own writing in a variety of ways and displays similar to a website.

Using this platform, I believed I could still have the core elements of historical scholarship (critical engagement with primary and secondary sources, and a clear analytical argument) and I could also use it for public engagement and extend their interest and knowledge of New Zealand history. Readers from anywhere would be able to read the work which would be accessible through a web search. There will be no hard copy output.

I wrote my explanation of this with Scalar information, its use overseas and acceptance by Universities, (including Sharpe's History PhD) to the Graduate Research School as part of my overall Masters submission. Unfortunately with some back and forth, the Graduate Research Office had their reservations. They had concerns over the platform's longevity, how markers would access and assess it, and the thesis deposit. I provided answers to these concerns and was finally given permission from the Vice-Chancellor of Humanities.

I was asked frequently was the extra effort "worth it" when I would not receive any extra marks from the "presentation" of the thesis. My argument to this was why should I not try my hardest for an innovative and interesting thesis? Why settle for "it's always been done this way" (yes, I'm one of those people).

With the digital format finally approved I then had to produce the content itself. My "showpiece" was a virtual tour of the underground structures using VR. With this format I could clearly demonstrate the lack of accessibility of the toilets but also could show their original design and architectural style.[3]

The virtual reality designs were developed with a fantastic collaboration with Design Lecturers from the Otago Polytechnic. Using original plans

Figure 1. Render of the interior of underground toilets, created using original specifications and plans from archives, designed by Michael Findlay, Otago Polytechnic Design School.

and contract specifications for the conveniences from the Dunedin City Council Archives, the VR showed what the spaces were like to physically walk through. The staircases were narrow and wound down into the facility. They were tight to negotiate but once in the space, people can appreciate the beautiful structures that were built, with skylights and interiors that were modern, fashionable and aesthetically pleasing.

The VR software was available on a specifically specified laptop and funded as part of archive outreach work within Dunedin City Council. However, while it was very popular with staff and my heritage colleagues, it was not the easiest platform to push out to the public as it was confined to one laptop and one headset which could only be viewed in a certain room.

Figure 2. What viewers see when they are in the Virtual Reality experience

With another collaboration developed with the Otago Polytechnic IT School, a third year student, Mitchell Briggs, was assigned to help develop an Augmented Reality (AR) application of the toilets from the VR version previously designed.[4] This meant people could view the

Figure 3. Render of the interior of underground toilets with coloured tiles added from photos from Manor Place toilet, created using original specifications and plans from archives.

same experience but with a smartphone slotted into an easily accessible and less expensive headset (in this case a Daydream headset).

Together Mitchell and I showcased this to the public as part of the Dunedin Vogel Street Party (which mixes heritage and technology) to huge success with often queues wanting for a turn throughout the event.

Figure 4. Author with original headset in room set up for virtual reality experience

For my digital thesis, the submitted video of the VR tour was edited footage with a voiceover of the two experiences (both VR and AR) blended together (both of them involve me walking around with the headsets on). I am disappointed I could not give the anonymous examiners the headset experience. However, I did get to trial it on staff and postgraduate students from the University of Otago History Department.

I also created an interactive timeline and Geographic Information Systems (GIS) software maps to showcase the locations and city within the thesis and these pieces of work contained film footage, including the interior of the last remaining 1912 toilet in Dunedin to support my argument.

Figure 5 and 6. Members of the public having a virtual walk through of the old toilets, Vogel Street Party, Dunedin, 2019.

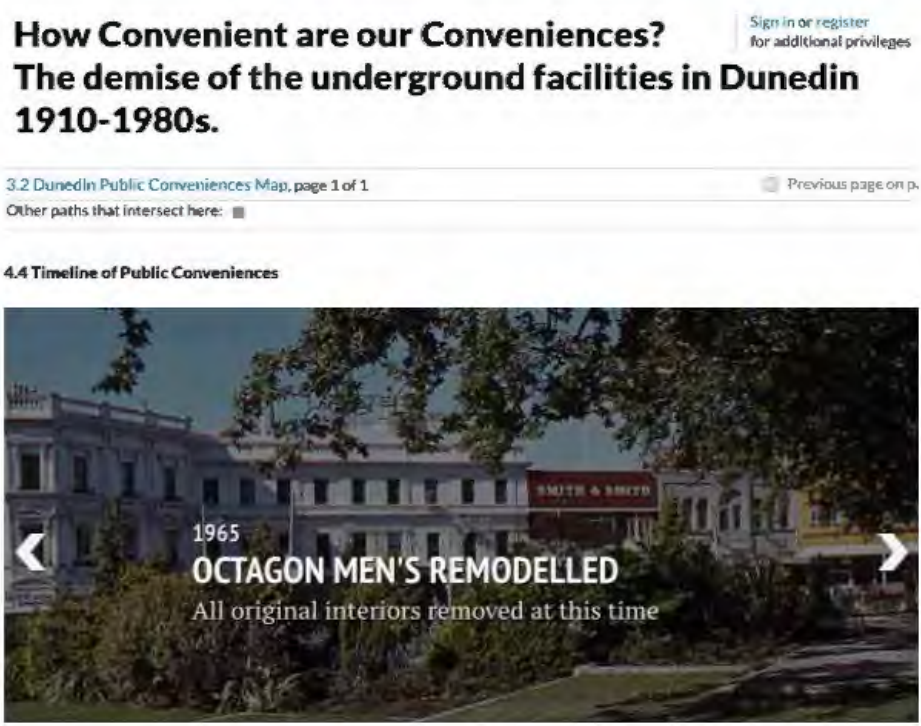

Figure 7. A screenshot of the interactive timeline within the thesis.

One of the biggest challenges which I feel I did not fully solve was the linearity of the thesis. All of the multimedia elements can be viewed in isolation or while reading through the chapters. The chapters, however, stick to a traditional chronological timeline, but readers can click on various chapters throughout the Scalar site as required through hyperlinks. All the footnotes are embedded hyperlinks so when readers hover over them, they can display information and readers can be taken directly to a website link if applicable. This format was not in line with University policies but I wrote an explanation on how this worked within the format with my submission.

Figure 8. Example of an embedded footnote within the thesis

The images and multimedia that make up the thesis are not stored within the Scalar platform itself - they are uploaded as links. There is a risk that these links will break (link rot) and not link to the original digital item or footage. I created my own website and used that as a site I had control over and uploaded and stored all the digital thesis components onto it. This enabled long term preservation of the thesis content. I also made sure to register the Scalar thesis with the Internet Archive so it can be "frozen in time" and if all fails with accessing in the future, a reader can still read the content as it was in 2019.

All these considerations around the digital creation, longevity and access did cost money and relied on a lot of collaboration and communication with various institutions and businesses. The creation of the VR was funded by my employers at the time, the Otago Polytechnic student resources were given freely (I was the client of the student) so enabled the AR product, and there were website costs for hosting which I had a company set up and sponsor. All of this can be seen as too difficult for many students who might want to take on a similar project. Communication was all important in building relationships with skilled people and resources in my local area who supported and embraced what I was trying to achieve.

When it came time to submitting, I once again struck policy issues as there had been no guidelines around the submission of a solely digital thesis arranged by the University. This created extra work around the submission. I had to set up an anonymous email address and password for the markers to access the thesis (as until accepted it was only accessible through a login portal) and I then developed a one page document with the Scalar log in details for examiners. For clarity I stated that I would not in any way edit the thesis once submitted (which I'm not sure anyone had thought about) and this was recorded on the site itself with edited dates clearly visible on the thesis platform.

I created a "How to Navigate Scalar" User Manual that accompanied the submission letter as a step by step guide for the examiners to successfully enter into the Scalar platform as I wanted the experience to be as seamless as possible and to be easy!

I set out with very clear intentions however, I did have to modify some of my original ideas as technological challenges did restrict what I was able to achieve. The thesis I submitted for library deposit was a pdf (as the library was unable to ingest it as it was) with a one page disclaimer stating that this was an altered version of the online thesis (and therefore not the one examined) and I included the url address to the original thesis in this documentation.

The challenges I faced were many including the University's resistance to change and gaining permission to submit on an unproven format at the Otago University, challenging academic policies, the costs of creating the platform component of the thesis, and writing my own rules around submitting. All of this was a large workload on top of an ordinary thesis process.

Would I do it again? That's a hard question but I would love for someone else to take up what I started and explore more interactive options for postgraduate work, especially around digital and archival material. Overall, I feel I made a good start to the process and hopefully paved the way for other students to continue doing this type of work. Oh, and I passed with Distinction…whew.

Endnotes

1. For my thesis see https://scalar.usc.edu/works/conveniences/index
2. For more information on the two PhD works see Celeste Sharpe https://www.historians.org/publications-and-directories/perspectives-on-history/summer-2017/a-history-dissertation-goes-digital and Kate Nesbit http://nextgenphd.lib.uiowa.edu/2017/04/28/from-ink-to-hyperlink-experimenting-with-an-online-comprehensive-exam-portfolio/
3. https://scalar.usc.edu/works/conveniences/43-virtual-reality-tour-of-the-octagon-underground-conveniences
4. Brook, Lesley, eHeritage newsletter, Otago Polytechnic Research, https://hail.to/otago-polytechnic-research/article/KKGbuhj