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# Really real and virtually real: celebrating the works of Bert Flugelman

Michael K. Organ
*University of Wollongong*, snappa22@gmail.com

Grant C. White
*University of Wollongong*, gwhite@uow.edu.au

Karen L. Illesca
*University of Wollongong*, kareni@uow.edu.au

Nathan L. Riggir
*University of Wollongong*, nriggir@uow.edu.au

Phillippa J. Webb
*University of Wollongong*, phillipp@uow.edu.au

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## Abstract

University of Wollongong Library's Wry ARTificer exhibition, featuring the work of Bert Flugelman, blended physical and virtual environments as a practical showcase of the organisation's digital capabilities. A range of technologies were utilised, including the Microsoft Hololens augmented reality platform and 3D digitisation and modelling techniques. The exhibition stimulated collaboration between diverse communities of practice, including curators, archivists, learning technologists, software developers and librarians, to deliver an exciting and innovative interpretation of Flugelman's life and work.

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Michael Organ
Manager Repository Services
University of Wollongong
morgan@uow.edu.au
https://orcid.org/0000-0003-1907-1135

Grant White
Manager University Archives
University of Wollongong
gwhite@uow.edu.au
https://orcid.org/0000-0003-0387-2368

Karen Illesca
Communication & Events Co-ordinator,
Library
University of Wollongong
https://orcid.org/0000-0002-9628-7848

Nathan Riggir
Maker/MediaSpace Co-ordinator,
Library
University of Wollongong
https://orcid.org/0000-0002-7401-577X

Phillippa Webb
Exhibitions Curator, Library
University of Wollongong
https://orcid.org/0000-0002-0508-9548

**Abstract:**
*The University of Wollongong Library's Wry ARTificer exhibition, featuring the work of sculptor and painter Bert Flugelman, blended physical and virtual environments as a practical showcase of the organisation's digital capabilities. A range of technologies were utilised including the Microsoft Hololens augmented reality platform and 3D digitisation and modelling techniques. The exhibition stimulated collaboration between diverse communities of practice, including curators, archivists, learning technologists, software developers and librarians, to deliver an exciting and innovative interpretation of Flugelman's life and work.*

Figure 1 - Viewing Bert Flugelman sculptures through the Microsoft Hololens,
University of Wollongong Library, March 2019.
Note the large television screen outside the entrance to the UOW Student Makerspace
displaying the image seen by the Hololens wearer.

# Future Ready

The University of Wollongong Library's (UWL) *Future ready digital strategy* outlines a number of challenges for addressing the online first expectations of the University community, though none are insurmountable (Jantti 2018). These include rethinking library spaces, improving staff and student digital literacies, adopting digital-first principles, especially in regard to collections, optimising digitally enabled learning and service environments, and maximising research visibility. By exploring solutions to these challenges, a range of outcomes presented themselves to heighten the digital dexterity of UWL staff, develop productive partnerships across campus, and deliver innovative access to information. Galleries, libraries, archives and museums have since the days of the ancient Egyptian Great Library of Alexandria, provided access to information, resources and collections (Wikipedia 2019). This basic *raison d'etre* has not changed despite technological advances in recent years. Libraries and archives continue to work at the interface between technologies and users, mediating and facilitating access to individuals, groups and organisations. Whether it be a book, bookshelf, archive box, card catalogue or building, the use of *real*, non-digital technologies remains at the core of the work of libraries and archives. At UWL, the new digital realm is being addressed in a largely 'business as usual' fashion, all the while recognising that the rate of change and complexity associated with technological development is unprecedented. Librarians and archivists do not necessarily have degrees, or training, in programming and the more advanced aspects of information technology, yet there is an increasing desire to enhance both awareness of, and the ability to use, a wide range of applications (Kennan 2019).

# Background

At UWL, staff have proactively engaged with the evolving digital agenda since the appearance of CD-ROM and online databases during the 1980s and 1990s. Participation in the Australasian Digital Theses (ADT) program from 2004 was a stepping-stone and later gave rise to an ambitious program to digitise the University of Wollongong (UOW) theses collection back to 1954. This was spurred on by implementation of local open access repositories in 2006 and 2010 respectively. The bepress Digital Commons platform, rebranded as *UOW Research Online* (https://ro.uow.edu.au/), went live in January 2006. The Innovative Interfaces Inc. Content Pro collection management platform went live in 2010 as *UOW Archives Online*. It was replaced in 2017 by the Recollect platform, rebranded *Archives Online* (https://archivesonline.uow.edu.au/). Approximately 4,200 digitised theses were subsequently made available at the completion of the program in 2016. This established a technical dexterity, which provided capacity to further explore local digitisation initiatives and stimulate ongoing interest in the evolving technologies. These would facilitate access and enhance usability of UWL unique collections.

In order to meet preservation and conservation challenges, the UWL digitisation program was formalised in 2012. It focussed on a range of content including film, video, audio, manuscripts, posters, prints, photographs and cultural heritage material that leveraged the possibilities offered by new streaming technologies and provided impetus to the program (Organ & Daly 2014). Expansion of UWL staff digital literacies, and engagement with the digital humanities disciplines, were offshoots of the program. Soon, artificial intelligence (AI), virtual reality (VR), social media and smartphones were becoming part of everyday experience at UWL. For example, during 2017-18 UWL, in collaboration with the Learning, Teaching and Curriculum (LTC) unit and honours students from the Faculty of Engineering and Information Sciences, participated in a chat bot project that began the process of developing a local query database for use within an AI environment (Sie & Nolan 2019). From May 2017, virtual reality devices were also made available to students and staff in the UOW Student Makerspace, located on the ground floor of UWL. In addition, the seeming ubiquitous use of smartphones by students, for social and course-work related tasks, was widely observed by UWL staff during the same period. The success of the ongoing process of upskilling staff members revealed itself through the *Wry ARTificer* Bert Flugelman exhibition held in the Library's Panizzi Gallery between 4 November 2018 and 31 March 2019 (UOW Library 2019a).

*Wry ARTificer*, in addition to celebrating the work of artist Bert Flugelman, was conceived to showcase a range of approaches in exhibiting and exploring both real works and virtual representations of works, alongside their use in research, teaching and learning. Generating impact from the exhibition was a primary consideration in the development of the technological elements. In the modern era, higher education organisations need to have impact in both real and online environments (Zardo 2017). This is achieved, in part, through research and teaching, along with promotional activities, exhibitions, engaging with social media and ensuring that the systems provided to clients are efficient, effective and usable. The landscape for achieving and measuring impact is also changing. The primary means of measurement a decade ago was through the use of physical statistics, such as how many books were being borrowed; how many items were on the shelves or metres of archival material was being stored; how many people came through the front door;

and how many users made face-to-face inquiries of professional staff. For example, in 2008 there were 1,184,054 visitations to UWL through the main gate. This was an increase from 852,483 the previous year (UOW Library 2008). In the *Online First* world, impact is measured, in addition, through granular statistics such as online database accesses; full text downloads of content; social media likes; and chat interactions, to name just a few of the metrics currently utilised by UWL. Augmented reality provided an opportunity for new metrics to be applied to archival materials. Though the UWL Panizzi Gallery exhibition space had been in operation since July 2013, statistics gathering was rudimentary and evolving. It initially comprised counting the number of people who made comments in the visitor's book and a rough guess of those who attended openings or events in the space. In June 2016, an electronic entry/exit device was installed. This was supplemented by online usage statistics for the digital elements of the exhibition, gathered from Google Analytics and the *UOW Archives Online* platform internal statistics package. For example, between 16 December 2018 and 31 March 2019 the counter registered 2964 entries to the space.

*Wry ARTificer* was the first exhibition at UWL to integrate augmented reality (AR) elements (UOW Library 2019b). It was identified by the librarians and curatorial team as one way to enhance engagement with UWL and generate impact both on campus and externally (Nguyen 2019). This would be achieved through use of the AR elements in the exhibition space throughout the term of *Wry ARTificer*, and online access both during, and beyond, that period.


## The Flugelman Connection

Herbert "Bert" Flugelman (1923-2013) achieved wide recognition as both sculptor and painter. His commissions for public art and sculptures within cityscapes have been controversial at times; however, over time have become much loved and accessible features of many cities and galleries. Flugelman was instrumental in establishing the famous Tin Sheds gallery and art workshop at the University of Sydney, which he kept open day and night to encourage student creativity. His influential teaching career included lecturer at the South Australian School of Art, Head of Sculpture at the Adelaide College of Fine Arts and Education and senior lecturer in the University of Wollongong's Faculty of Creative Arts. For his service to UOW, especially in inspiring and supervising doctoral students, Flugelman was made a Fellow in 1990 and awarded an Honorary Doctorate in 1995. Widespread recognition of his outstanding lifelong contribution and service to the visual arts as sculptor and teacher includes the Australia Council Visual Arts/Craft Emeritus Award 1997 and Member of the Order of Australia (AM) 2006 (https://archivesonline.uow.edu.au/nodes/view/5607).

Following his death in 2013, the Flugelman family donated a collection of Bert's papers, works and other items to the UOW Archives in 2015 (UOW Library 2018b). Flugelman archival material had already been deposited with the State Library of New South Wales in 2001 as part of the German Collecting Project, and works, including large sculptures, were distributed around the country in both public and private collections. However, the scope of the collection at UOW Archives formed a comprehensive overview of the artist's creative and private life up until his death. It included early sketches, photographs, plans, diagrams, appointment diaries, notes,

bills and correspondence. The deposit contained many artistic works which were placed into the UOW Art Collection alongside, metaphorically at least, a number of larger works which had been acquired or commissioned by the University. Contextually the Flugelman Archives sit removed from the best-known works of the sculptor but speaks to his process and imaginative life through his documented relationships: private and never intended for exhibition or installation, but nevertheless, the work of the artist is the artist's work.

The audience for a paper-based archive is not the same as the audience for a large public sculpture. Access to the archive requires an appointment and generally a more than passing acquaintance with the subject matter. Similarly, the public artwork is often reduced to being part of the landscape or, as is the case of Flugelman's *Lawrence Hargrave Memorial* sculpture located within the Illawarra Escarpment forest and accessed by a steep climb along a dirt path, hidden by it. Obstacles, either administrative or physical, are impacting on understanding the work and the Artist. Benjamin's 1935 essay *The work of art in the age of mechanical reproduction* examines the impact of reproducibility of art upon our understanding and value of it (Benjamin 1935). He argues that the original artwork is anchored in time and context, and while responses to it may change over time, it remains valid. Reproductions can only ever be an inferior shadow of the original, the real. However, re-visualising and exhibiting archival collections can liberate them into a non-hierarchical, non-linear experience, not so much liberating the work from "time and context" but rather creating an experience of the object that reconnects it with an audience, incorporating new kinds of agents, in an act of becoming that facilitates open-ended conversations (Duff 2015). The art can be "exposed to new contexts and new uses" and a contemporary understanding.



Figure 2 – Section of the *Wry ARTificer* Bert Flugelman exhibition,
University of Wollongong Library, November 2018 – March 2019.

The act of exhibition also provides opportunities to augment a collection with additional material created or sourced as part of the curatorial process. For *Wry ARTificer*, a series of interviews were conducted with contemporaries and collaborators, providing another level of contextual understanding of the subject. The

archives are rarely the entire story, and in the case of *Wry ARTificer,* many key works and documents are somewhere else - in different cities, behind walls, up the garden path in private collections, or embedded into environments such as city malls or the side of a mountain. It may be one thing to see the engineering drawings for a large work, and identify the dimensions of the footings, but it is another thing entirely to see that large artwork in its place. In this way, there is always a danger of disappointing the audience with a picture of the thing – you go to see the Eiffel tower and buy a model of it, you do not go to see the model. Wherever possible, we try to bring a sense of wonder, derived from the archival material - the really real - to the curated interpretation of the archive. UWL staff, therefore, embraced opportunities to expose the archival collections in new ways, whether by format shifting and dissemination through the various mechanisms of the internet, or in connection with the Library's exhibition programme, where a curated perspective can be revealed to a larger interest group.

While researching for this exhibition, it became clear to the curator that Bert was a multi-faceted character both in his private life and through his creative output, often full of contradictions that seemed to complement him and his work. Choosing a succinct, two-word exhibition title that captured his essence as a person and his creativity was challenging. A word wall began to form in the curatorial workspace, revealing that what was needed was the perfect complementary contradiction. An old friend and wordsmith, Donald Brook, suggested "Flugelman: a wry artificer", i.e. a skilled craftsman or inventor who uses dry, especially mocking, humour. This was deemed a perfect fit, and adopted, with appropriate typographical variation.

## A virtual deep dive

In June 2017, UWL curatorial and promotions staff attended a presentation by Microsoft on the Hololens augmented reality platform. At the time, they raised with Microsoft staff the possibility of including the technology in the UWL exhibition programme. The latter was the equivalent of a sandbox, where staff could play and experiment, and where successes and failures were short term and did not have implications on organisation wide infrastructures or processes. The short-term nature of exhibitions meant that successes could be built upon and refined, whilst failures could be learned from with very little risk. The exhibition program was a safe space to play and to learn. Such a supportive culture had been in place at UWL since 2012 as a result of the digitisation program, where success relied in part on the adoption of new technologies, and experimentation therein. The sandbox mentality was a natural offshoot of that.

Another "sandbox" appeared through the development of the UOW Student Makerspace, established on the ground floor of UWL in May 2017 (UOW Library 2017). The Makerspace was student focussed and sought to engage with, and make available, emerging technologies as part of the UOW research, teaching and learning experience. As a result, virtual and augmented reality devices and applications such as the Oculus Rift, VIVE and Microsoft Hololens were acquired by the facility. This enabled extension of those technologies into the exhibition program with the intention of providing a broader audience for experimentation within the VR and AR space. Students could be guided or undertake degree or course-initiated creation of virtual objects in the Makerspace. The virtual world could provide a

valuable supplement to the real-world experience, rather than being a mere replacement. It was also envisaged that the lessons learnt in the exhibition experimentation process could be rolled out through the organisation or stimulate developments in the teaching and learning area (Krokos 2018, Briggs 2018).

In the staging of *Wry ARTificer*, the exhibition team utilised a wide range of traditional and innovative technological skills, such as 3D modelling of external sculptures and digitisation of archival materials, with an equal emphasis on the real and the unreal, on the physical and the digital, the analogue and the virtual. For example, original (small) pieces of sculpture and maquettes were included in the exhibition space, alongside original drawings and photographs of the same, whilst virtual renditions were also made available of Flugelman's work, both online and via the Oculus Rift platform. The exhibition was a landmark for UWL – it was the most technologically complex to date, and critically well received. It also enabled UWL staff to demonstrate technical dexterity to clients excited by the possibilities offered by virtual reality, online communal game playing and artificial intelligence (Collins & Halverson 2018, Alt 2018).

As part of its digital journey, UWL engaged with users, developers and colleagues in an effort to better understand both the needs of the Archivist and the opportunities provided by Information Technologists. The Archivist was seeking to present as broad a range of material as possible within the exhibition; the opportunities provided to them included the use of digitised material and augmented reality technologies. The adopted digital strategies made use of these connections to implement ideas and test technologies. In 2017, UWL began working with LTC on the virtual replication of Bert Flugelman's large *Ammonite* sculpture (UOW Library 2018b).
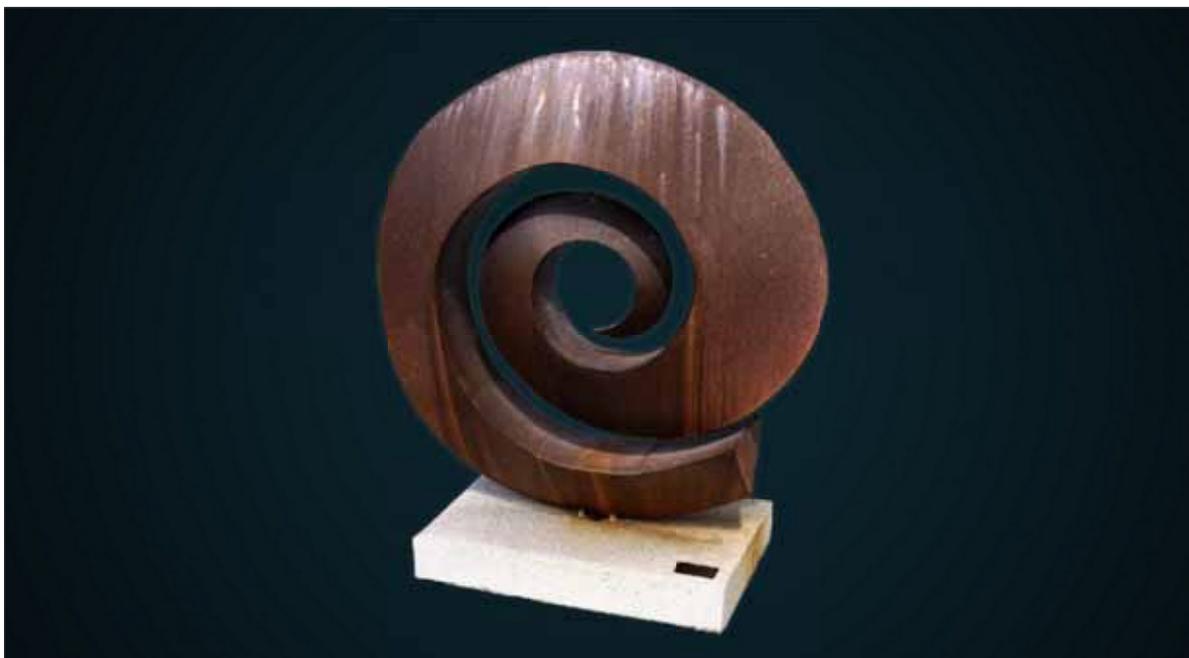


Figure 3 – 3D replication of Bert Flugelman *Ammonite* sculpture,
*Archives Online*, University of Wollongong, 2019.
This 3D object was derived from the Microsoft Hololens VR object.

The sculpture, emplaced at UOW's Innovation Campus in 2015, was scanned and remodelled to create a virtual object for viewing through the Hololens. Over an 18-month period during 2017-18, a further four Flugelman sculptures were replicated in full size. Web-based versions were also developed for digital archiving in the *UOW Archives Online* open access repository (UOW Library 2018c).
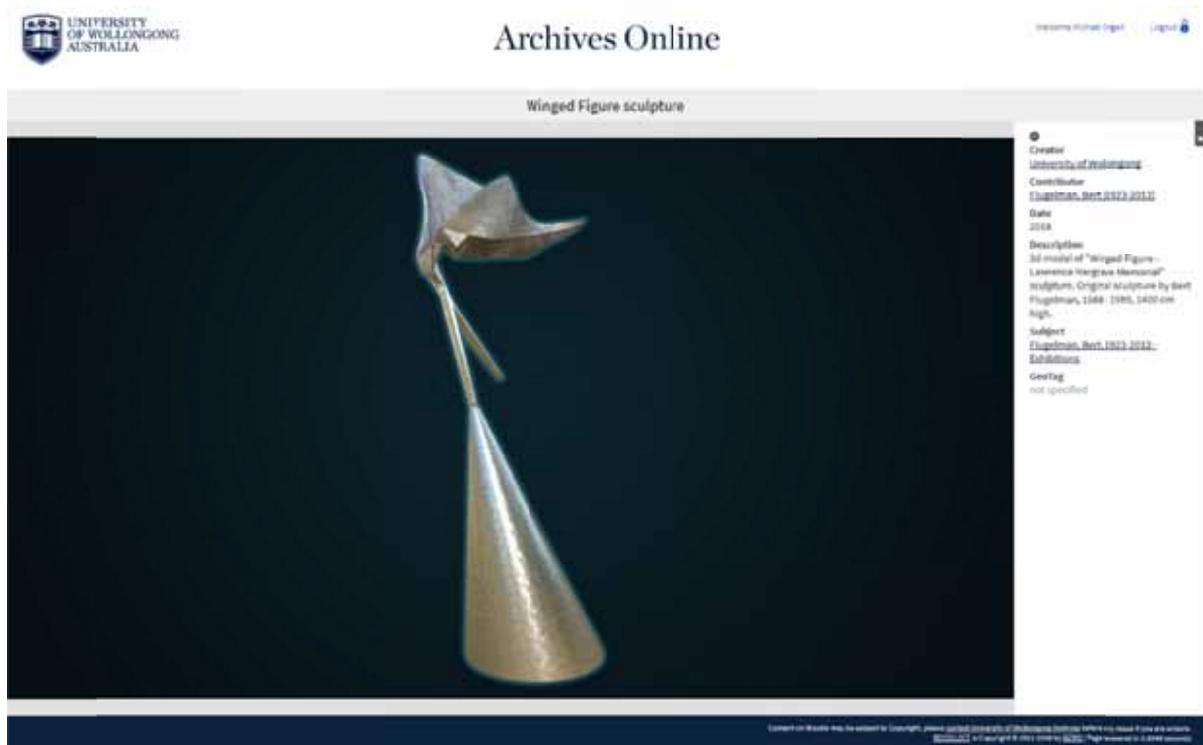


Figure 4 – 3D version of Bert Flugelman *Lawrence Hargrave Memorial* sculpture, *Archives Online*, University of Wollongong, 2019.

*Wry ARTificer* was a notable achievement in that it represented development of a synthesis between the real and the virtual (i.e. the 'unreal'), successfully combining both within an exhibition environment. One notable example of this was the "Wow!" factor evident in the full scale, VR replication of the *Lawrence Hargrave Memorial* sculpture. Artist Ken Orchard was a close friend of Flugelman who worked with him during the period in which this sculpture was designed and built. He had never seen the completed work in situ, and was amazed by the detail and information provided in the VR space, giving rise to frequent use of the word "Wow" whilst engaged with the full scale, 10-metre-high Oculus Rift version.

## Curating the virtual

The application of new technologies within the traditional curatorial space of *Wry ARTificer* was driven, in part, by the desire to present certain artworks that could not physically exist in the space, in addition to other "virtual" elements generated through traditional means. These included specially prepared interviews and historical film footage. Capturing people's stories and being able to record and transmit them

through a variety of technologies presents a richer, more holistic viewpoint. Consideration was given to the use of available technology that could enable the inclusion of certain works, whilst also providing a sense of scale and size to achieve a level of authenticity. It was recognised that virtual replication could provide a partial solution that added value to the exhibition beyond being a token add-on or simple gimmick. Inclusion within the exhibition of large sculptural items was initially not considered because of the difficulty in presenting that range and style of work. The curatorial focus therefore moved elsewhere. This changed, however, with the successful virtual replication of Flugelman's *Ammonite* sculpture and its Hololens presentation. The testing of that application through 2017, and expansion to a further four sculptures the following year, allowed that area and body of Flugelman's work to be included in the exhibition, thereby expanding its overall scope in regard to his style and artistic career. This was significant, as it provided an insight into the man as an artist, his progression from student days right through to the end of his life, and to the major public sculptures that he is best known for. Bert Flugelman was an artist who utilised many different types of medium. Seeing the physically different objects virtually, in comparison to a physical maquette (a small-scale version of the sculpture), demonstrated slight variations in style and design. The use of virtual reality and other digital technologies also enabled the curatorial team to bring to the exhibition some older works that might not have necessarily been known about or seen because they were interventions or performances. For example, in 1975 Bert Flugelman buried six aluminum tetrahedrons in an unmarked spot in Commonwealth Park, Canberra, as part of the Commonwealth Gardens Sculpture Exhibition. A video of this burial was recorded at the time and featured in the exhibition (Flugelman 1975).

UWL experience in staging *Wry ARTificer* revealed both potential uses of virtual technology and limitations. For example, it was realised that the creation of a dedicated VR room as an integral part of an exhibition could provide a totally immersive experience, whereby the user inhabits, and moves within, a real space such as the gardens of Adelaide, Melbourne, Sydney and Wollongong. As part of their experience, the user could see and walk around sculptures in their natural settings. In the current virtual realm, we only see the physical sculpture, devoid of context. However, that sculpture is also specific to its location. We cannot see the settings, though the settings are important to Flugelman's works in, for example, stainless steel because they are reflective surfaces. Upon those surfaces you can see yourself and the world around you, all of which then become part of that work. By having the sculptures isolated in a VR form, that intimate experience is denied the viewer (Diaz 2018).

Figure 5 - Bert Flugelman experiencing his reflection in a sculpture, revealing the surrounding Seattle cityscape. Collection: UOW Archives and Art Gallery of New South Wales.

There are further tensions with the technology in this space. In creating the virtual work, it is important to retain as much of the original - its patina, sense of presence and environmental context - in order to be true to the artwork and the artist's intention. Anything is *virtually* possible, including remaking the work and changing the very nature of the object and its meaning. Yet therein lies the technological challenge. In dealing with real objects and making them accessible to the world, we are obliged to maintain as much of the reality and uniqueness of the object as possible, whether it be a piece of paper such as an archival manuscript, a publication, or a work of art. At this stage, it seems unlikely that a virtual space will ever be as good as the real thing, considering the physiological and technological constraints (Ch'ng 2019). Even if it gets very close, as humans we will still seek to engage with real things and have real, authentic, tactile experiences with objects and collections. It is well known that in museums, galleries, libraries and archives you go to exhibitions to see the real thing, not to see a copy of it (Deng 2019).

The virtual experience and utilisation of digital technologies also provides value in terms of archiving an exhibition and making it last beyond its physical existence, thereby enabling both first time and repeat experiences (O'Brien 2019). Physical exhibitions are by their nature ephemeral, and traditionally only preserved through reportage, photographs, catalogues and audio-visual recordings. New digital technologies provide the opportunity to archive a more authentic experience. The *Wry ARTificer* exhibition was digitally archived on the *Archives Online* digital collections website. This brought together audio, video, AR elements and an interactive bitmap representation of the exhibition (UOW Library 2019c). After going live on 4 April 2019, it experienced over 1000 hits up to 16 October 2019, and continued to provide access through search engines such as Google.

Figure 6 - Digital archive of the *Wry ARTificer* exhibition, with interactive panels, *Archives Online*, 2019.

## Conclusions

The virtual can be a stepping-stone to intimate engagement with the real. Exhibitions are ephemeral. However, virtual technologies and the digitisation programs that support them change the experience and enable long-term access and archiving. The process of developing and curating *Wry ARTificer* expanded the scope and scale of what was possible within the UWL exhibition program. The partnerships that grew during the curatorial process, as digital dexterities were honed and technological possibilities emerged, provided exciting new opportunities for collaboration and interpretation of the subject matter. UWL staff, in curating *Wry ARTificer*, were able to work seamlessly in real and digital environments, transferring skills and knowledge from one space to another. They utilised a wide range of traditional exhibition methods and promotional tools, alongside software platforms and websites. Both hard and soft skills were developed, ranging from digital curation, writing and preparing material for the web, website development, engagement with VR and utilisation of social media, through to creative thinking, active teamwork, development of a growth mindset, networking and community engagement (Grant & Shalavin 2019). Virtual reality software facilitated engagement with important works of the artist that could not otherwise have been included in the exhibition space due to their size. The inclusion of these technologies in the exhibition also generated partnerships with experts from different areas of the University Community that would not have otherwise played a part in curating the exhibition. Future collaborations may arise in the use of this type of technology and would benefit from the use of tighter project management methodologies than were in place for the *Wry ARTificer* exhibition. Virtual technologies, whilst alluring, nevertheless pose a range of complex issues in the archival context. Careful use of these interpretative tools must be considered as part of the investigation and implementation process if they are to be more generally applied beyond the exhibition space.

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