

'Play It Again' – creating a playable history of Australasian digital games

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[intro slide]

Thanks for the opportunity to present to you today. I'm Nick Richardson, the Collections and Access Manager at the Australian Centre for the Moving Image in Melbourne, Australia.

Before we start I'd like to mention that in my country, it has become important before the beginning of any significant event that brings together people under a common cause to acknowledge the traditional owners of the land on which we meet. In our case at ACMI in Melbourne it is the Kulin nation.

While I don't profess to have any in-depth knowledge or intimate connection to the first nations people who once made Savannah their home, I think our Australian tradition is a noble and worthy one and I'll start off my talk by acknowledging the first nations elders both past and present, and thanking them in absentia for the opportunity to meet with you here today. Indeed in some ways, recognising a past overshadowed by a dynamic future, has some parallels to the work I want to discuss today.

ACMI is currently participating in a three year research project with peer institutions and universities in both Australia and New Zealand to document, collect, preserve and provide access to the largely unknown collection of Australasian digital games of the 1980s.

In case any of you have forgotten what the 1980s looked like, or even worse, weren't yet born then here's a brief glimpse

[NZFA video slide]

- Play video, 30 sec

[Partners slide]

The Play It Again project has been funded through the Australian Research Council which supports projects which are collaborative between higher education researchers and other parts of the national innovation system. It is a collaboration between:

ACMI

Nga Taonga - The New Zealand Archive of Film, Television and Sound

The Berlin Computerspiele Museum

Flinders University, South Australia, and

Victoria University in Wellington, New Zealand

[slide of organisations roles and responsibilities]

The various expertise of each participant organisations is represented here in this slide. Partnership is the key to the success of this project as each organisation is able to contribute specialisation and extend the resourcing that any single entity could bring to such an endeavour. At this point I would also like to thank my colleagues – Melanie Swalwell, Helen Stuckey, Denise de Vries, Craig Harrington and Ian Welch for their generous support while putting together this presentation.

[slide of project intention]

The project's initiator, Dr Melanie Swalwell of Flinders University, has stated that

The digital future has a history and it needs remembering. Vital human and technical data is in danger of being lost. In the 1980s, the Australian and New Zealand software industries were remarkably active in the production of digital games and yet little is known about this chapter in the history of the moving image.

[slide of aims]

The aims of the project are to:

1. Research the production and reception histories of early digital games

2. Develop a collection
3. Document and preserve the games
4. Create playable multi-platform versions, and
5. Build research capacity in both the academic and cultural sectors

Today I'd like to examine each aim and then address some of the challenges such a project has presented for my institution.

[slide of Aim 1]

In researching the production and reception histories of 1980s Australian and New Zealand digital games the project team have chosen to launch a website, the Popular Memory Archive, to demonstrate the results of this research and act as a contribution portal for the community at large.

[slide of PMA aims]

The Popular Memory Archive has two main functions:

- To display the results of our research in a combined online exhibition and discussion environment, and
- Collect community memories, artefacts and information about this popular medium.

The Popular Memory Archive seeks to balance a history of production, in the specific national contexts of 1980s Australia and New Zealand, with a history of use and reception.

[aussie slide 1]

In researching the history of production the team has identified more than 900 locally written titles (700+ from Australia and 200+ from New Zealand).

[aussie games slide 2]

And while some have an unmistakably local interest it should be noted that the two most significant Australian studios from the period were Melbourne House and Strategic Studies Group. Both were leading companies who helped define the global industry and whose legacies are important.

[Alfred Milgrom slide]

Melbourne House dominated the European market in the early 1980s with 30% of all sales in 1985. The Australian company with its British offices was a defining player in the pioneering years of home computing. Beam Software, its Melbourne based development company, produced such important games as acclaimed text adventure “The Hobbit” which sold over 1 million copies, the pioneering beat-em-up “The way of the exploding fist” and the first wrestling game “Rock n Wrestle”. Indeed “The Hobbit” appears in the BFI’s “100 games” and in the late 1980s Beam was to become one of the companies to be granted a licence to develop for the Nintendo NES.

[carriers of war slide]

Strategic Studies Group, which was founded in 1982, was renowned for the integrity of their historical wargames. Their 1984 game, “Carriers at war” won the Charles Roberts Award for Best Adventure Game for the Home Computer. Their first game, “Reach for the Stars” in 1983 is credited with launching the 4x genre of space games (eXplore, eXpand, eXploit, eXterminate). With offices in America, SSG’s Roger Keating and Ian Trout had a very visible presence in the early days shaping the American industry alongside US pioneers such as Chris Crawford, Sid Meir and EA founder Trip Hawkins.

[chilly willy slide]

In addition to examining these successful companies the project also looks at the production of smaller outfits, hobbyists and educational games producers.

The work of the hobbyists who sold their games to local and international publishers documents an important moment in the history of the emergence of the game industry. They are the early iterations of this new manipulable medium and they tell us a lot about what defines videogames as a more intimate and mutable artform. These works include the early works of many designers who went to on to success in the commercial industry.

[microbe slide]

Games were most people's first encounter with computing in the 1980s and a surprising number of these encounters happened in the classroom. Many of these games explored local histories such as the Goldfields and Discovering Australia. Many were also accompanied by comprehensive teacher's kits for the classroom.

[History of consumption slide]

In seeking to understand the rise of the micro-computer and the cultural significance of videogames the Popular Memory Archive is also looking at the history of uses and interaction. This is in keeping with Patricia Galloway's call for the importance of personal knowledge in comprehending personal computing.

[Galloway quote slide]

READ QUOTE

Recognising that game culture in the 1980s was highly participatory, hands on, and often characterised by a DIY ethic, the project aspires to create a history of games as they have been used and experienced.

We are interested in hearing about what people did with early computers and games, what games they wrote, and what they meant to them then and mean to them now, and what

records they have. Contributors can add their experiences to the knowledge base and also their artefacts in need of preservation. I'd like to read a portion of one such contribution:

[slide of Souri quote]

READ QUOTE

[child playing game slide]

The Popular Memory Archive owes a lot to the work of the fan communities who took the initiative to document and preserve retro games long before there was any institutional discussion on the cultural value of videogames. It is exploring the potential for player memories to contribute to the building of games history.

[curated blog slide x 2]

In summary the Popular Memory Archive will

- Present the results of research as both database and exhibition
- Generate oral history recollections
- Assist in the location of rare titles, and
- Locate people with specific technical expertise to assist in the project

AIM2 – developing a collection

Now, turning to Aim 2 which focuses on collecting.

[900 slide]

As previously mentioned, the project has identified 900+ locally produced games of the period and is initially targeting 110 of these for collection and preservation.

[aims slide]

The selection of titles for this shortlist is to enable the illustration of various curatorial themes including:

- The work of pioneering companies
- The rise of the bedroom coder, and
- Local scenes and local themes

Some of the other criteria informing our selections include:

- Important game designers
- Overall representation and balance, and
- Consideration of game quality

Selections have been based on existing information, interviews and conversations with game designers and fans. As much as possible, the project focuses on a breadth and depth of platforms, themes, and contrasting attributes.

[magazines slide]

Locating original source material has proven difficult. While considerable effort has been expended by the fan community in the digitization of many of the games of the period as a cultural institution ACMI prefers to source original material from which to create digital preservation masters. The lack of provenance information, version history and documented preservation workflow provided by the fan community makes them a last resort option as well as the uncertain legal status of much of the material.

To date, 30 originals have been located and digital capture tests have commenced.

[oral history slide]

As conversations about the cultural significance of digital games becomes increasingly sophisticated debates about what institutions will keep and preserve and what to focus collecting efforts on – the hardware/software, the artefact/object, or documentation – continue.

The project is also collecting oral history interviews, game reviews, magazines, publicity material and related ephemera

The project has also provided a focus for digitization priorities within ACMI's own moving image collection. Most recently we have digitized a collection of Department of Education titles relating to the introduction of computers into the classroom in the 1980s.

Here's a brief clip from one such title.

[History of computing slide & clip]

TURN UP VOLUME!!!!

PLAY CLIP

[aim 3 slide]

AIM 3 - Documenting and preserving the collection

Now, turning to Aim 3, which focuses on both the cultural and technical aspects of the project. Firstly, documenting the collection...

[libraries aust slide]

The level of computer game cataloguing within cultural institutions to date has typically been poor. As the recognition of these objects as vital to our understanding of the reception of early computers and their role in providing engagement with collections increases we must take steps to address this.

[The Strong slide]

ACMI has been working to improve its management records to better engage with the community through more meaningful catalogue data.

A level of international standardization does already exist for the recording of descriptive data about these materials. We are, however, grappling with how best to collect and record information about the often complex relationships involved – between the game and the story, art or film that may have inspired it; between editions of a game released for different hardware platforms and software versions; and between versions that represent actual revisions of design or code. These relationships are further complicated by the development of editions suitable for play in emulation.

[World of Spectrum slide]

In addition to the actual software, the collection and/or documentation of a range of associated materials – consoles, manuals, posters and other advertising material, fanzines, and online repositories of player experiences – will allow a far more comprehensive description and preservation of this area of screen culture. The best methods for the harvesting and sustainable presentation of such complementary information are still being explored.

[Lemon 64 slide]

We need to consider the variety of audiences for whom we are maintaining this information; and the ways in which different groups will discover and use our data. While for the gaming enthusiast the main interest may be in accessing a playable version of a game online, social historians and other researchers will be more concerned with the re-creation of social memory and access to complementary. Others will be interested in the creative personnel and the version development of a game.

[Vernon records slide]

Here we see a series of screen snapshots from ACMI's collection management system, Vernon (developed in New Zealand) which attempts to illustrate the depth to which we are cataloguing material collected during the project.

[slide of datasette]

Turning to the preservation process, my colleagues Denise de Vries and Craig Harrington from Flinders University have been working on the capturing of software stored on magnetic tape for Commodore microcomputers and working with a KyroFlux to image floppy discs from the era. I'd like to spend some brief time discussing the tape capture process.

[commodore tape layout slide]

The raw audio file contained on the tape is captured from which a TAP file can be created for use under emulation. TAP file creation software responded best when the audio was captured

(or at least re-formatted) as 44.1mHz and mono as the bit rate of the tapes tends to be quite low at 300 bits per second. Craig is using a hexadecimal dump of the TAP file to eyeball pulse lengths and assist in the location of errors.

[Sangioz et al slide]

Audio dropout due to aging tapes is a significant problem. In a recent capture test at ACMI of 9 cassettes only one produced a playable TAP file – the others showed dropout which Craig Harrington has represented in this slide based on the work of Sarigoz, Kumar and Bain.

[raw audio file showing header and sync tones]

Craig and Denise are working further with a MATLAB decoder running in Python to verify data via a ninth bit checksum and therefore better identify errors. The fact that the tapes often contain a second copy of the program data enables error correction but the work can be time consuming.

The addition of 3rd party turbo loaders incorporated into program data enabled faster loading by omitting the redundant second copy but presents problems for preservation. Many of the tapes we have encountered to date contain turbo loaders and in fact Beam Software has it's own in-house version, built in one evening by an employee we are lead to believe.

The project has chosen the TAP container file format as appropriate since it captures all the essential information about the recording.

Craig and Denise's work is not atypical as generating TAP files from raw audio is notoriously unreliable and most fan forums discuss the need for clean up work, and what it reveals for the project is that this is far more time consuming than initially imagined.

[aim 4 slide]

AIM 4 – creating playable, multi-platform versions of the games

[emulation slide]

Aim 4 has a technical focus and the aim here is to make playable multi-platform versions of the games to render them accessible to the community now, and for as long as possible.

[emulation phases slide]

Ian Welch and Stuart Marshall of Victoria University in New Zealand are currently exploring various options. Their current project plan identifies the following phases:

Research
Design, and
Validation

[considerations slide]

The team are considering the pros and cons of various options. As you can see here the 3 options consider end user competency as well as the legal ramifications of the various options. The results of this research are expected to flow into the project commencing in 2015.

[other considerations slide]

Other considerations include

Meta data

Collaborative gaming
Persistent gaming, and
Recording games

[aim 5 slide]

AIM 5 – Build research capacity in both the academic and cultural sectors in the area of digital cultural heritage and the ‘born digital’.

This aim, while perhaps not having had the outcomes the partners would have liked, is also one that will not be fully realised for some years to come as we see how each institution develops their responses to born digital on the back of this project.

In June of this year the project organisers held an international conference in Melbourne on Born Digital and Cultural Heritage.

[conference slide]

While not specifically focussed on the work of the Play It Again project it was an opportunity to present the results of the project in a broader context. 39 speakers from Australian, New Zealand, America, England, Poland, Germany and France presented papers on a wide range of topics related to the born digital and cultural heritage related matters.

[play it again website slide]

The ongoing success of the Popular Memory Archive I think is testament to the commitment of the academic project partners. The work being done on preservation and emulation are on track and Dr Swalwell of Flinders University has secured another round of funding to expand the project in subsequent years to work on games of the 1990s.

For ACMI involvement in the project provided a focus for the games and born digital aspects of our recently revised Collections Development Strategy. It has also deepened our technical knowledge and forced the creation of a more detailed digital preservation strategy.

[way of the exploding fist slide]

It has created meaningful national and international partnerships and forged new academic connections. Involvement in such projects fits well with ACMI's aim of being a centre for research excellence.

However, such projects must be generally undertaken without significant additional resources and involve a steep learning curve.

For my own part as Collections and Access Manager at ACMI the project has presented numerous challenges and I'd like to spend the remaining time examining these.

[ACMI slide]

ACMI has managed a small gauge moving image collection since 1946 and during the last 15 years has committed significant resources to building exhibition capacity and to the commissioning and collecting of time based media art. Our move to Federation Square in the heart of Melbourne's tourist precinct has seen us evolve into an internationally recognised hub for screening and advocacy, screen education, industry engagement and audience involvement.

[ACMI collections website slide]

Like many similar institutions we have been challenged by the requirements of digital and new media works and have made great strides in incorporating digitisation workflows into our more traditional back-end practices. As one of the longest running film collections in the country our role as archive has also grown.

[Research website slide]

Additionally, our work with commissioning artists mirrors the significant work established by the Tate, MoMA and others during the Media Matters consortia of some years ago. The Play it Again project is a good fit with this work and like the collecting of time based media art the collecting and preservation of 1980s digital games for this project has presented a number of challenges.

[challenges slide]

CHALLENGES

Organisational resources

Unfortunately in the space between committing to the project and the project being approved ACMI has experienced a reduction in government funding. This resulted in the loss of both technical and legal capacity that had previously been targeted for the project. The legal aspects have had to be absorbed by other team members and the technical capacity is now unlikely to be as robust within ACMI as first hoped

Preservation pathway – easy on paper

The process of creating the digital preservation master files and executables – as with much of the work we do in our sector – appeared reasonably straight forward on paper. The execution has proven to be both more difficult and more time consuming

Cataloguing – internal need versus external expectations and discoverability

The challenges for the cataloguers are being worked through in an attempt to produce a detailed, meaningful dataset for use internally but also to produce something accessible to casual users and researchers alike.

Locating original source material

To date only 30 of the list of 110 target game titles have been located and acquired. This is one of the inevitable problems preserving heritage material that in many cases had limited production runs and distribution markets.

Harvesting the popular memory archive and fan sites for long-term access

We wish to harvest both the data uploaded to the project Popular Memory Archive and discuss with various fan sites such as World of Spectrum how best to preserve their considerable information archives against possible loss due to private funding constraints

Audio capture future proofing

Will the capture of raw audio at 44.1kHz and in mono be shown to have been a retrograde step in the future? Should a higher sample rate be used now in case technologies improve? A scenario all too familiar to the archive community

Compatible software

We are already experiencing software incompatibility. The software used to generate tzx files, preferred by Spectrum systems, is not compatible with the current Windows operating system. We are currently reliant on the fan community to keep this type of software current which leaves institutions vulnerable unless internal expertise is developed.

Authenticity of emulation version

Will the emulated experience be sufficiently faithful to the original experience? How much derivation is acceptable?

END

The project has certainly been worthwhile and will make a meaningful contribution to the distributed collection of early computer games and associated materials. It has also produced collaborative international partnerships which will stand us in good stead for future projects. It has bolstered ACMI's archive skill set and provided focus for at least one area of future collection development.

I hope I've managed to present a meaningful summary of what I believe is a very valuable project that should provide significant benefit to the gaming, archive and research communities alike.

I believe we have a few minutes left for any questions you may have

[questions]