Harnessing the Arc-Hive

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Abstract
This paper addresses the construction of archival collections through the use of public support and volunteer labour. It examines the requirement of a new archive to engage with consumers and participants to achieve its desired outcomes. The Western Australian New Music Archive (WANMA) is a research project involving music advocacy organisation Tura New Music, the State Library of Western Australia, ABC Classic FM and the National Library of Australia. It seeks to collect and make accessible, in digital form, new music associated with Western Australia from 1970 to the present day. WANMA will also create new performance pieces for inclusion within the archive. The collection is currently in its formative stages but builds upon a seeding project which involved the digitisation of Tura’s archives. This made visible the fact that much public experience of new music is as a comparatively ephemeral and experimental art form, and many traces and recollections of iconic and everyday performances need to be collected soon if they are not to be lost entirely. Alongside the technological and copyright challenges facing such an enterprise, WANMA seeks to engage with musicians and music lovers who might have materials of interest for the archive which can be digitised and then returned to the original owners. Such materials include, but are not limited to, recordings. Indeed, they encompass all conceivable peripheral artefacts of new music in Western Australia, from performance programs through to letters describing a concert, through to individuals’ memories. Such a project needs to engage with, and fire the imaginations of, audiences past and present.

Key words: crowdourcing; music archive; music digitalisation; new music; Western Australian New Music Archive

Introduction
The Western Australian New Music Archive (WANMA) is an outcome of an Australian Research Council (ARC) Linkage Project that unites the efforts of Tura New Music, the State Library of Western Australia (SLWA), Australian Broadcasting Corporation (ABC) Classic FM and the National Library of Australia (NLA) to create an archive of Western Australian (WA) new music from 1970 to the present day. The project recognises both the importance and the challenge of continuing to build and enrich this archive with the incorporation of a range of new recordings, to be performed and broadcast as part of ABC Classic FM. The project might seem to be a somewhat esoteric activity, involving a group of musicians who might between them constitute a comparatively select community of practice (Bettiol & Sedita, 2011) over the past 40 years or more, but that is to underplay the capacity of an archive such as this to inspire and engage the public in its creation and use. For the archive aims to capture not simply the music and the musicians’ input, but also the peripheral evidence of the impact and reception of the performance of new music in Western Australia over the past four decades.
WANMA is the first project of its kind and scope in Western Australia. There has been no new musical investigation or database with an exclusive Western Australian focus, in the state or beyond it. While there have been two major music archive projects based in Western Australia – The University of Western Australia’s Callaway Centre’s 2003 Preserving Australia’s Sound Heritage (PASH) project, cataloguing a collection of Australian music recordings and manuscripts donated to the university by Japanese philanthropist Dr Haruhisa Handa, and the 2005 Sound Footings project, which collated, catalogued and digitised the Eileen Joyce Collection of international piano music, recordings and paraphernalia – neither focuses on Western Australian music specifically, and both are determined by the benefactors’ collection. In addition to PASH, the University of Western Australia’s Callaway Centre contains many important Western Australian new music recordings, scores and collections, and there is also a comprehensive Meta Overman collection. Yet these collections remain within the university, largely uncatalogued and with limited accessibility to the public.

WANMA plugs a gap in existing collections of new music, which have generally overlooked the Western Australian scene, even though it is acknowledged to be one of the most fertile incubators of this art form. The Western Australian government, for example, has allocated significant recognition to the field with both the 2008 Ignite! project and the establishment of the Department of Culture and the Arts Contemporary Music Fund. Some other states have subsequently imitated these initiatives. Very few archives outside Western Australia hold examples of WA new music. Where such resources are available, however, WANMA will point to these and link them through to the pieces held in its collection.

Currently, the only accessible repositories for new Australian music are: the Australian Music Centre (AMC) collection (limited by the fact it only represents its members); the National Film and Sound Archive, which has very few Western Australian materials (V. Plush, personal communication, 2010); the National Library of Australia’s Music Australia service; the Facility for Digital Preservation and Access to Endangered Language and Music from the Asia Pacific (PARADISEC); and the Music Council of Australia’s Music in Australia Knowledgebase. None of these have an accurate representation of past or current Western Australian material, although they do include works by Western Australians. The majority of these collections are hardcopy, although the AMC is engaged in the ongoing digitisation of their collection.

It is difficult to offer a watertight definition for new music although the AMC suggests that it includes “notated composition, electroacoustic music, improvised music (including contemporary jazz), electronica, sound art, installation sound, and multimedia, web and film sound” (AMC, 2008). The genre is often experimental and improvised, without a score (Hope, Riddoch & James, 2009). It may be part of an installation, and is frequently encountered in combination with one or more alternative/additional artforms, such as dance or film. It can encompass site-specific works, soundscapes and music made from non-traditional instruments, such as teapots. Further, the ephemeral nature of new music means that some iconic performances and events will lack formal sound recordings but may nonetheless be evoked through the recollections of audience members and any memorabilia that they might have retained. The range and diversity of recordings, performances, artefacts and the many contexts of new music pose a significant challenge to the archive and the research team in terms of artefact capture and digitisation.

It is interesting to note that Australia has been leading the field in the examination of digital preservation issues since 1994 (Lee, Slattery, Lu, Tang & McCrary, 2002). Several projects in Australia have aimed to preserve various digital materials, including the Preserving and Accessing Networked Documentary Resources of Australia (PANDORA) project at the National Library of Australia, which led Web archiving methodologies internationally (Lee et al., 2002). The primary objectives of PANDORA are to capture, archive, and provide long-term access to significant online publications, addressing both archiving and preservation processes.

Major international music digitisation projects such as Variations2 (Dunn, Byrd, Notess, Riley & Scherle, 2006) and European Music Navigator exclude Australian music almost completely, highlighting the need for Australia to create its own repositories and interfaces. Recent overseas projects using e-technologies to
support research outcomes include the Online Music Recognition and Searching project (OMRAS), which developed automated symbolic processing methods to aid music discovery and retrieval (Byrd & Crawford, 2002), and was used as a basis in the Australian Music Navigator: Research Infrastructure for Discovering, Accessing and Analysing Australia’s Musical Landscape project, despite its limited application to non-notated music. The Australian Music Navigator was an ARC Linkage Infrastructure, Equipment and Facilities project with the AMC as industry partner and was one of the means through which the dearth of archived WA new music became apparent.

The Centre for the History and Analysis of Recorded Music (CHARM) at the University of London ran from 2004 to 2009 with the aim of promoting the musicological study of recordings, drawing on a wide range of approaches such as computational analysis and business history. The CHARM project was an example of a larger research enterprise concerned with analysis of recorded materials to glean generalisable information, in that case particularly to do with performance style and technique (Leech-Wilkinson, 2009). These globally innovative projects have provided a valuable background for negotiating emerging trends in digital archiving.

If new music is an important aspect of the creative and cultural life of Western Australia, the archive is a means of presenting it as if it were a coherent entity. Velody (1998) comments that “behind its apparently systematically organized array of objects, artefacts and data, lie a panoply of contingent and ad hoc machines for bringing the performance of the art museum into play” (p. 10). The construction of this resource is necessarily a dynamic and evolving project and one which requires the harnessing of the imagination and energy of musicians and their publics and audiences to realise its aims.

The Future of WANMA

The important task of discovering and confirming the nature, location, scope and accessibility of collections of Western Australian new music has been the primary activity of the WANMA project to date, a process which began over twenty years ago. More recent work has involved researching the most appropriate technologies, processes and techniques to deliver an online archive that is able to grow and develop over time, with the ability to house non-traditional forms of music and ephemera. The complex matter of copyright surrounding public accessibility and contributors’ rights in digital music archives (Besek, 2003) has always been an important part of the ongoing project at large, with the intention of realising a comprehensive, curated, living music archive of Western Australian music from 1970 to date that is accessible to an international audience. In addition to the collection of extant materials for the archive, the realisation of concerts and sound installations of works in and for the archive is an important component in the ongoing development of WANMA. This highlights the nature of both WANMA and Tura New Music as proactive supporters of Western Australian music in practice and legacy.

The upcoming phase of archive development is the finalisation of resource construction at SLWA, in close association with the project partners. Wide consultation on interface design will ensure an archive of maximum utility for the next stage of the project. WANMA in fact builds on the infrastructure acquired by SLWA for an oral history digitisation project funded by LotteryWest. As part of the LotteryWest project, SLWA purchased extensive hard drive arrays and systems, and established open source server systems that will be used as a starting point for WANMA, augmenting these with more hard-disc storage arrays. These arrays will host the content of the archive, which will be made available to the public through a website portal that is separate to the SLWA catalogue, whilst remaining accessible through the catalogue. The archive back end will be built with open source software that is currently being employed at the State Records office of Western Australia. This employs a web-based archival description tool known as ICA-Atom, together with a digital preservation system known as Archivematica. These systems can be customised to link with the larger SLWA catalogue.

The curators, alongside the ABC and National Library of Australia, will guide SLWA staff towards finding Western Australian new music resources beyond the three-year period of the grant. This will be done by
familiarising the staff with current WA new music practice, key performers, composers and industry representatives through the live concert performances as part of the project, but also materials currently in the archive, currently reflecting 25 years of WA music activity collected by Tura New Music. It is hoped that public imagination will be fired by the project as it becomes public, with the latter stages of the project incorporating the “crowdsourcing of information” (Delitt & Schindeler, 2012). Studies examining user involvement in particular items and metadata show that the problem is often not securing contributors, but rather controlling and managing their contributions (Riley & Shepherd, 2009). Institutions such as libraries and museums have long relied on volunteer contributions, the main differences for online contributors being that of scale, connectedness and ease of use (Oomen & Aroyo, 2011).

The major method for accessing volunteer participants is through the use of snowball referrals (Biernacki & Waldorf, 1981) using widening circles of influence for recruiting support. The centre of this influencer-circle is constructed from Tura New Music’s networks, and those of the libraries and co-industry partner, broadcaster ABC. These networks account for many hundreds of people with an established interest in the field. From this core, using industry partner contacts in terms of mailing lists and member profiles, key opinion leaders and motivators will be alerted to the existence of the archive and their help enlisted to recruit others. In addition to publicising the development of the archive through such networks, the project will garner publicity through print and broadcast media and recruit directly from the wider public. New recordings for the archive, already planned as part of the research, will provide a further opportunity to request audience members to take part. Once recruited, audiences will be guided by the site as to how to make their contributions – for example, through scanning a pamphlet that promoted a 1970s concert and uploading it to the archive. There will be access to additional support where required. This methodology builds upon the digitisation project previously completed with Tura New Music, which provided the proof of concept that underpins the original proposal for funding.

There is a fine balance to be struck between encouraging public participation and ownership of the project and ensuring the relevance and quality of materials deposited. While digital resources raise different storage challenges from those arising with traditional hard copy resources, it remains important that materials are flagged for relevance via such strategies as tagging. ‘Report abuse’ and ‘query relevance’ buttons will help ensure that the archive balances the needs of the user in the face of possibly indiscriminate contributions by participants. Ultimately, professional archivists will control WANMA’s content while aiming to encourage wide participation and take-up. With the SLWA taking responsibility for hosting WANMA and committing to its ongoing management and development, this three year investment in an ARC Linkage project will continue to provide research benefits long into the future without a reliance on recurrent funding.

The input of the staff at the National Library of Australia will ensure that future developments of WANMA are interoperable with the national information infrastructure. The NLA and the SLWA work in close consultation, and already form part of a wider national coordination through National and State Libraries Australasia (NSLA). The NLA and SLWA will work together to establish the standards, protocols and methodologies for the project to ensure that WANMA is interoperable with international bibliographic and digitisation/digital archiving processes. The NLA is an integrator of new technologies and supports archives that link and chain together including through the application and use of technical tools. Its leadership and experience in managing and archiving digital objects as well as archiving websites, such as the aforementioned PANDORA, will provide an essential pool of advice to the project.

WANMA will add a sophisticated and multi-layered approach to bibliographic retrieval mechanisms for music, enhancing the value of current national infrastructures supporting music research and performance. The content in WANMA will not only be available to the public for the first time; much of it will also be heard for the first time and will permit users to engage more deeply with music online. The establishment of WANMA in a major state library will provide important ground-breaking research and development concerning intermedia digitisation, as well as increasing awareness of Western Australian musical cultural life.
World Leading?

Although WANMA is a new-archive-in-preparation, Australia – and particularly the NLA – can argue that it is a global leader in at least one aspect of digital archives: “the newspaper correction program” (Delitt & Schindeler, 2012). Since March 2007 the NLA (n.d.) has been running a project (the Australian Newspaper Digitisation Program) to digitise the nation’s historic print media resources as they come out of copyright, currently comprising those titles and issues printed between 1803 and the 1950s, starting with the first colonial newspaper. There is still some way to go before the work is finished. The project was made available for public access in July 2008, and newly digitised articles are released every day. Each original newspaper article is scanned using Optical Character Recognition (OCR) software, which creates a digital document which is a ‘copy’ of the printed press item. Unfortunately, OCR software results can be unreliable, with plenty of instances of like-looking shapes being confused – for example, b being replaced by 6, S by 5.

The public pages offer instances of the issues arising from relying on OCR to construct a searchable database. For example, the OCR-generated text asserted:

Both statements are incorrect. Dr Ullathorne expressly mentions that there were three priests here on his arrival in 1813 the Rev. J. V. Dowling, who had arrived in 1829, being the third, and he certainly does not assert, or lead any ordinarily careful reader to suppose, that disputes had arisen between Fathers M’Enroe and Therry. (Rhonda M., 2013)

Rhonda M., the text corrector, rendered the same passage as:

Both statements are incorrect. Dr Ullathorne expressly mentions that there were three priests here on his arrival in 1813 the Rev. J. V. Dowling, who had arrived in 1829, being the third, and he certainly does not assert, or lead any ordinarily careful reader to suppose, that disputes had arisen between Fathers M’Enroe and Therry. (Rhonda M., 2013)

The revised version is readily comprehensible and accurately searchable, but such labour-intensive activity would ordinarily be prohibitively expensive.

It is in this context that Delitt and Schindeler (2012) note that “the activity of volunteer text correctors has broken new ground for Australian services. Many thousands of people have corrected more than 50 million lines of text, with around 60,000 lines corrected every day”. This activity reflects an urge to “develop transparent, networked, multimedia, multi-repository resources” (Gilliland-Swetland, 2000, p. 1). The urge to contribute reflects a similar desire by musicians and their audiences to recognise personal activity in, and enthusiasm for, WA’s new music scene as meaningful and important. The existence of the archive demonstrates the importance of over 40 years of new music activity in Western Australia and provides a focus through which that importance can be made accessible and can be expanded. Further, the collection will ensure that the past is more available to the artists and audiences who will be constructing the future.

The digital newspapers project is not the only example in the NLA’s collections of the crowdsourcing of expertise. In the mid-2000s, the NLA harnessed the photo storage and sharing online image repository Flickr to expand and update the free-to-access PictureAustralia resource:

Previously PictureAustralia gave users access to images only from collecting institutions such as libraries, galleries archives and museums. Flickr was used as an instrument to receive photographic submissions from the public. The PictureAustralia Flickr group (now feeding into Trove) has 2,836 public members and has accepted nearly 100,000 images of Australia and Australians. (Delitt & Schindeler, 2012)

The hope is that WANMA will similarly engage with members of Western Australia’s new music communities.
This may not be a realistic ambition. The newspaper correction project is a particularly absorbing one, with a range of statements made about why text correctors have become involved. One person, for example, notes:

Each contributor may have a different combination of motives, not a single one. … I had been encountering Trove occasionally for several years. I made a point of always editing any article that I used, but I kept coming across articles that I could not correct in full because there were lines missing, and only registered contributors can insert new lines. So I registered. (Catessa, 2011)

A different text corrector explains her engagement on the grounds that she is:

a hobbyist researcher with a huge interest in labour history, and this [Trove] gives me an outlet that far trumps any other alternative. I often focus on early 20th century labour politics, sometime segueing into interesting events that happened at the time, and sometimes into cultural aspects of the times (i.e. I find old women’s interest columns fascinating). I’d spend all day on here if I could, and I think I used to be about #7 in the text correctors’ list, but being in my twenties and having to work and study I just can’t keep up with the retirees! (Rebecca, 2012)

A friendly rivalry is encouraged within the community, as this latter comment indicates with its note about rankings being applied to text correctors in terms of their outputs. The community engagement was one of the possible benefits foreseen of the national digitisation program. Potential benefits include:

- Data quality is improved for all users;
- Keyword searching is improved for all users;
- The community becomes involved and engaged in enhancing and enriching the resource;
- Users become empowered;
- Innovative thinking is demonstrated;
- The method to improve data quality is cost effective;
- If successful the method could potentially be applied to other full text projects;
- Web 2.0 technologies could be utilised and the service would have a ‘cool factor’;
- The resource is more likely to meet user expectations if digital content is improved; and
- New virtual user communities and social networks would be built. (Holley, 2009)

Equivalent hopes are held for WANMA and its future development, with the creation of a community of archive contributors and users who, it is hoped, will find that WANMA is a space in which they can relive, retrieve and contribute to a record of key experiences around new music and its place in Western Australian artistic heritage. This would focus more on the inclusion, rather than correction, of materials, and could include the addition of photographs, posters, flyers, newspaper and magazine reviews, bootleg recordings and other ephemera relating to a performance of a particular work in the archive.

The SLWA has successfully implemented a pilot project of a similar nature with Storylines, a central access point for digitised heritage collections relating to Aboriginal history in Western Australia (SLWA, n.d.). The project uses the ‘Ara Iritija’ software, a purpose-built platform developed in South Australia for the project of the same name, which allows the tagging and linking of a variety of materials including video and audio, as well as public uploading.
Harnessing the Hive

The notion of “harnessing the hive” in digital domains first arose in terms of open source software development (Streeter, 2003) but became more prominent as a key component of Web 2.0 activities, where many collaborators work together to achieve a project that an individual or a small group could not hope to realise alone. Wikis and blogs are both instances of such Web 2.0 technologies (Bruns, 2008), with Wikipedia an early example of the transformative power of collaborative activity (Green, 2010). The NLA newspaper digitisation program is another.

This metaphor of the hive builds upon previous metaphors of coordinated online activity, “the cathedral” and “the bazaar” (Raymond, 2000). The dichotomy of the cathedral/bazaar contrasts the coordinated, directed activity of workers who know their place and do not venture too far from the constraints of their role (as in a large commercial software company, for example), with the vibrancy and enterprise evident in a dynamic, competitive, yet collaborative marketplace.

Voluntary cultures that work this way are not actually uncommon … [for example] science fiction fandom, which unlike hackerdom has long explicitly recognized ‘egoboo’ (ego-boosting, or the enhancement of one’s reputation among other fans) as the basic drive behind volunteer activity. (Raymond, 2000)

There are good ways and not so good ways of encouraging people to work together online. Esther Dyson, in a foreword to an early article on “Harnessing the hive” (Herz, 2002), notes that a (commercial) organisation that hopes to engage others in its projects needs to:

- foster the community: Give it a place to congregate and collaborate. And it needs to build macros that make it easy to add functionality. An optimist would point to Web services … and indeed they provide some of the technical platform that will make it easy for third parties to add modules. But developers should think a little about creating an appropriate cultural platform, too. How can you encourage users to feel a sense of creative (not just financial) ownership? (Dyson in Herz, 2002, p. 2)

This vision clarifies the dynamic in which it is communities that give rise to some archives which constitute “a crucial site for national memory … [acting] as the sanctum, the place in which the sacred texts and objects were stored that were used to generate collective identity and social solidarity” (Featherstone, 2006, p. 592). The creation of WANMA marks the birth of a living archive, fostering performance, recording, and leading-edge academic research. A unified, accessible home for Western Australian new music has begun, complemented by a wide variety of resources for those interested in new music, whether as performers, researchers, students or lay persons. The aim of the archive has always been to provide musicologists, performers and the broader industry with access to works previously unavailable, thus actively encouraging research and development in new music curation and creation. As a critical resource for researchers of Australia’s cultural history, and a tool to enhance the development of cultural industries, the archive promotes access to and fosters awareness of, Western Australian new music activity.

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