

## Knowledge Nation: Eyes and Ears

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"While in some ways Australia is already on a path to becoming a Knowledge Nation, we are a disconnected and under-performing one. We must have a clear picture of our resources and optimise their use."

So ends the first recommendation of the report of Barry Jones's Knowledge Nation taskforce. What Jones and his co-workers propose, to gain that clear picture, is a national knowledge stocktake which will lay the basis of a national inventory or knowledge bank. As Recommendation 2 of the report goes on to say, this knowledge bank, or cadastre, would lay the basis for action and policy formulation. It would be a large-scale mapping exercise of Australia's physical and human resources, with a particular emphasis on issues of environment, health, research capacity, employment and education. It would be the first stage of a networked Australia, better linking states with the Commonwealth, and being available for both public and private use.

In this knowledge Australia the role of cultural institutions will clearly be a networked one. Institutional walls will fall; research and art will lose their customary forbidding frames. Access will be the watchword. As the National Library of Australia pithily explains in its current Strategic Directions document: "All Australians, at their place of choice, [should] have direct, seamless access to print and electronic sources of information." The British Library goes a bit further, in its latest (2001) vision statement, with the hope of "making accessible the world's intellectual, scientific and cultural heritage. The collections of the British Library and other great collections will be accessible on everyone's virtual bookshelf -- at work, at school, at college, at home." The British Library, along with our National Library and so many of our cultural institutions, is currently involved in smaller-scale versions of the ALP's national inventory exercise. That is, it is mapping the needs of our age by locating, describing and then connecting collections and materials. The biggest challenge, of course, is not in these exercises of cadastration themselves, nor in publicizing what our national resources are, but rather in making the materials available on that virtual bookshelf, "at work, at school, at college, at home".

The act of "making accessible" involves fundamental issues of priorities, finances, technologies and rights, which tie in with questions of the degree to which access is free to the public, operated on a cost-recovery basis, or for profit. The British Library's Strategic Directions document even attributes percentages to its main purposes and priorities in the knowledge culture of the early twenty-first century. While access to the Library's collections, in whatever form, is open to anyone, it recognizes that the Library is:

- The cornerstone of the UK Higher Education and research infrastructure, and 60% of our work is in support of this sector
- A wealth-creating resource for business and industry, and 20% of our activity underpins commercial development and innovation
- A key element in Britain's cultural life, and 15% of our work is in support of public library activities.

The British Library's enabling strategies -- again not dissimilar to those of our National Library or the Knowledge Nation statement -- have a strong focus on users, partnerships and the web, leading through further strategies for collection development and access to better information outcomes for researchers, the general public, and the various library networks.

Around the world the move to a knowledge culture is built upon information value for users, productive so-called win-win partnerships, and maximal use of the potentialities of information and communication technologies. As the Knowledge National statement itself identifies, however, the talk is very loose, with the terms data, information, knowledge and wisdom being mixed with little distinction in the debate. It is not really clear, for instance, how an information economy differs from a knowledge economy.

In most current documents there is an assumption, however, that this knowledge will be in some kind of storage-efficient verbal or numerical form. What interests me today is how the various non-verbal or originally non-numerical forms of knowledge will fare through the stocktakes, mappings and building of comprehensive digital forms of access. Specifically, I am interested in still images and music: two vitally important parts of Australian culture, that is, of Australian knowledge. Both of these media were relatively slow to take to the digital world, although digital recordings have been around since the mid-1970s. Then, some three to four years ago, the exponential growth of speed and memory functions made their widespread digitisation not just possible, but tremendously convenient.

It could be observed right away that knowledge in its written, or texted, form can be summarised, paraphrased, even reordered, and still retain its thrust of meaning. Sound files and visual knowledge tend only to carry significance if the original format is preserved, or very substantially preserved. This means that their storage, and especially their electronic storage, can be expensive and extensive. Also, very complex issues of rights are involved.

The PictureAustralia project ([www.pictureaustralia.org](http://www.pictureaustralia.org)) is one example of how some Australian institutions are networking to enhance user access to important collections of still images. It is an initiative of three State libraries, the Australian War Memorial and the National Library. It leaves the issue of preservation -- one most important reason for digitising collections -- largely to individual agencies, and focuses on digitisation "to increase public access to Australia's heritage in pictures". As described by Debbie Campbell, Manager of Infrastructure Projects at the National Library, PictureAustralia has had to grapple with the different technical standards of many physically separate collections, and has settled on the common

JPEG format as the preferred standard for image rendition. The JPEG standard also allows more than one rendition, that is, a range from low to high resolutions. PictureAustralia also incorporates important record descriptions from the individual participant collections, which are being mapped into a Dublin Core standard scheme.

I hope PictureAustralia will take its proud place in our national cadastre, should the electoral fates go that way. What it, along with various other visually oriented schemes -- some involving geographical maps, and others involving architectural drawings -- are doing is opening up, to the nation and the world, collections which might otherwise be little accessed. As Debbie Campbell describes, enabling "our target sector (in this case, the average Australian, sometimes known as the 'taxpayer') to see the value and beauty of the collections they have funded." ("Picture this", *Australian Registrars' Committee Quarterly Newsletter*, late 2000.)

Sound, too, is a most important part of our knowledge culture. The average Australian teenager listens to music for at least ninety minutes a day, sometimes in audio, sometimes in video format, and occasionally live. But there are other sound sources of importance: the sounds of our natural environment, from the waves to birdsong; oral history testimonies; the sound records of famous events. Think, for instance, of such national treasures as Bob Menzies' radio broadcast of September 1939 bringing Australia into the Second World War, "authentic recordings" of Dorothea Mackellar reading "My Country", or Percy Grainger playing *Country Gardens*. The advent of MP3 has shown just how ideal -- for many a recording company, altogether *too* ideal -- the web is for the transmission of audio files.

Music has always been an Achilles heel of the information sector. Part of the reason is that its notation is easily separable from its sound source. Matching the scores, often known as *the* music, with the sound source, which actually *is the music*, has been the bane of many a music librarian's or researcher's life. How many times have I called up an LP, cassette or CD in a European library, and then discovered that the score was held in another, distant collection, and, furthermore, that there was no ready facility to play the recording at all. One could only look at it. And at a distance all 12-inch LPs look very much the same!

Music digitisation projects, then, sometimes focus on the notated music. The American Memory Project: Music for the Nation -- American Sheet Music, 1870-1885 ([memory.loc.gov/ammem/smhtml](http://memory.loc.gov/ammem/smhtml)) is one high-profile example, soon to extend itself backward to 1820. (There is, of course, an important issue of how sheet music is practically used. While the old American sheet music is fine in computerised form for many musicological purposes, for those who want to play it, the hard copy remains the norm. The web heightens access to, rather than the usability of, such music. Computerised music stands, although in theory a good idea and devised in rudimentary fashion nearly one hundred years ago, have never taken off.) The Canadian Virtual Gramophone ([www2.nlc-bnc.ca/gramophone](http://www2.nlc-bnc.ca/gramophone)) project, in contrast to sheet-music digitisation, is intended to provide digitally restored recordings from the First World War era and before, along with descriptive information. Other schemes,

such as VARIATIONS ([www.dlib.indiana.edu/variations](http://www.dlib.indiana.edu/variations)) of Indiana University developed a digital library of over 5,000 titles of near-CD-quality audio files for use by University students. Now, many of those Indiana files also have associated notated scores, so that the listener can follow the score as the music plays. That is, the notation and the sound profile have been united.

Music on-line now appears in downloadable and directly streamed forms, including through on-line radio stations and as live performances -- some events even involving ensembles spread geographically across the world and performing simultaneously. The thinking behind the National Library's emerging MusicAustralia project is fully in keeping with the emphasis on access, partners and the web common to all turn-of-the-millennium mapping exercises. At present, MusicAustralia has no competitors. There is no overarching map of Australia's musical landscape. Like PictureAustralia, MusicAustralia seeks to work with partners, such as the Australian Music Centre in Sydney, and ScreenSound in Canberra, to provide a comprehensive digital resource of music *per se*, along with its notation and its documentation -- a resource of equal use to the rock-band guitarist, the music lover and the professional researcher.

More than this, initiatives such as MusicAustralia have the ability to democratise much music which previously existed only within closed circles of the initiated, either because of its symbolic language or because of its stylistic inaccessibility. The uninhibiting access of the web invites the browser, and with that, a healthy stylistic promiscuity. The challenge for the website designer is to entice the browser within the first few seconds of that first click with a seductive presentation at a suitable level of musical address.

The Australian Music Centre has a not dissimilar role to the National Library's MusicAustralia initiative, that is, to make as accessible as possible Australia's most concentrated repository of the compositions and recordings of Australian music of the last century. It sees digitisation as its primary means of enhancing that access, and has embarked upon a five-year project to digitise all of its collection of scores, that is, some twelve thousand works by around 360 composers, about eighty percent of which has never been published. The project has the advantage, however, that a growing percentage of scores from the early 1990s onwards is already in digital format. Many recordings of the 1980s and 1990s are also already in digital format. Located in Sydney, the Centre knows that its federal purpose can only ever satisfactorily be served in a virtual way. The priorities of the AMC's 2000-2003 Strategic Plan are:

- a. Documentation: development and implementation of a strategy for digitisation of all materials (including bio/bibliographical materials, scores, recordings, and education resources); implementation according to available resources.
- b. Access: development and implementation of a strategy for online delivery of content and services.
- c. Services: Enhance services to education sector; further develop services

for regional, state and national levels; and further develop international profile.

These priorities are in support of the Centre's vision of "an environment where Australian music is recognised alongside other artforms as an effective vehicle in articulating Australian cultural identity, and [is] regularly heard and appreciated nationally and internationally."

The Centre's digitisation project is also conditioned by international events. The International Association of Music Information Centres, involving over forty countries, has received a grant of EU750,000 from IT development funds of the European Union to implement a search engine which can search across all databases of member centres. This is an opportunity for Australian music to gain greater prominence, particularly in the European and American domains where it is already in demand.

An Australian knowledge culture, enriched in its eyes and ears by such projects as PictureAustralia, MusicAustralia or the Australian Music Centre's digitisation project, is indeed utopian. Perhaps the MusicAustralia project catches the dynamic nature of these enterprises best with its vision of providing "seamless access to Australian music resources and information for a multiplicity of users across a comprehensive range of musical styles and music-making, and [supporting] the paradigm shifts taking place in music documentation, delivery and communication in a rapidly changing technological environment."

I would like now to touch on several issues which the digitisation of music and, to a lesser extent, of pictorial sources, has highlighted. These issues are:

- difficulties in capturing music sources
- how we search music and pictorial sources as music and art, rather than simply through their verbal descriptions
- how we should charge for access, if at all
- the complex rights questions with non-verbal text sources.

The web has introduced a world in which production and dissemination of content is easier than ever, but meaningful archiving is all the harder. The National Library's PANDORA project is one attempt to archive websites that risk otherwise being lost to time. The archival problems expand exponentially with musical or visual sources, especially with live-streamed sites, which are deliberately designed, of course, to prevent downloading, and hence, sharing.

Next: sound as sound, and images as images. We lack the ability meaningfully to interrogate digital musical sources as sounds. Rather, we search them through verbal descriptions, external catalogues or embedded codes. I imagine the situation is not dissimilar with images, but there optical recognition systems could perhaps be of more direct help. Digital music composition systems allow for all sorts of manipulation of the various parameters of sound: pitch, rhythm, volume, timbre, and so on. A simple, stable search mechanism is needed which allows this compositional manipulation to be done in reverse, as part of an analytical search mechanism. Only then will digital music be able to throw off its handmaiden role to the verbal domain,

and uninhibitedly speak its own language. This reminds me of an old song from the 1930s: "It seems to me I've heard that song before. It's from an old familiar score. I know it well, that melody." The problem at present is that to search for that melody, you will probably have to go via a word search on the opening words, "It seems to me", rather than through a search for the pitch or rhythmic patterns which express those words.

Access and cost: So many public institutions hold out for free access, but I do wonder whether our rate of growth and flexibility is impeded by the excessive dependence upon the strained public purse. With the recently announced Contemporary Music On-line developments of the Australia Council, for instance, I wonder if some charging mechanism might not be advisable. I am thinking of the cafeteria-style of purchasing songs just now being instituted by the Big Five recording companies which between them control some eighty percent of the world's recorded artists. I mean the MusicNet collaboration starting this month between AOL Time Warner, Bertelsmann and EMI; and its competitor, Duet, formed between Universal and Sony Music, and using internet portal, Yahoo.

MusicNet and Duet will offer for US\$10 or \$15 per month a particular number of downloads, or, for somewhat more than that it is possible to purchase an all-you-can-download plan. There is even the prospect that MusicNet and Duet will present their offerings in a way which allows cross-downloading. Perhaps here in Australia, once the National Library, Australian Music Centre and Australia Council have their various sites up and running, some single access arrangement might be negotiated. What the MP3 legal cases of last year did demonstrate is that the public will pay good money for good music downloads -- probably more so than for many text materials -- and *that*, again probably, because the public does expect to pay something for its entertainment.

Lastly, rights: hanging over these many schemes, such as MusicAustralia, which are built around principles of maximal user access, is the issue of rights. In the United States, the Digital Millennium Copyright Act of 1998, which was intended to encourage the recording and movie industries to distribute their content on-line, has probably had the opposite effect. The Digital Agenda Bill, which started here in March, may well have the same effect as in the United States because of the enhanced ease for owners of musical works and sound recordings to license their property on-line. To many past minds, music on the web was, simply, free.

Musical rights are complicated because they involve traditional rights of the composer, of the performers, and of the sound recording itself. Now, since, March, there is the right of communication to the public, which combines preexisting rights for broadcasting and diffusion. This new right applies to what could be called "supplier-driven communication (e.g., traditional broadcasts and webcasts) and receiver-driven communication (e.g., audio or video on demand and streaming media)." Frank Rodi, in a recent *Sounds Australian* article (vol. 58 (2001), p. 11) explains that whether music is transmitted as a stream or downloaded it is still a "communication to the public". This, coupled with the recent clarification that the

onus for transmission of music on-line lies with the content provider not the service provider, promises to make the issue of musical rights even more complex, with up to three or four permissions being necessary to transmit a particular sound source.

In conclusion, then, let us remember Australia's eyes and ears, too, as we plan for the knowledge culture of the future.

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I thank Robyn Holmes (National Library of Australia), Philip Kent (CSIRO), John Davis (Australian Music Centre), Ian Willison (University of London) and Mark Carroll (Adelaide University) for their generous supply of information and their insights.