

OF CABBAGES AND KINGS: DIGITAL REFLECTIONS IN AN ANALOG LOOKING GLASS

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'The time has come', the Walrus said,

'To talk of many things:

Of shoes – and ships – and sealing-wax -

Of cabbages – and kings –

And why the sea is boiling hot –

*And whether pigs have wings.'*¹

It's not altogether fanciful to view the audiovisual archiving field in much the same way as Alice viewed Wonderland. It's not only full of the rich and strange, but also the bizarre and contradictory, and nowhere is this more true than in considering the impact of what I call 'the digital turn' on the profession. I did contemplate playing around with Carroll's verse (how about *of discs – and tapes – and terrabytes; of carriers - and pings*) but far be it from me to try to improve on the master. So I will merely content myself with some reflections on the dilemmas we face in this kind of twilight between the analog evening and the digital dawn.

In doing so, let's first remember the nature of the audiovisual media. Audiovisual documents² have *no objective existence*. What we perceive as a sound recording is an interpretation that our

¹ Lewis Carroll: *Through the Looking Glass , and What Alice Found There* (1871), chapter 4

² See the definition in Edmondson, Ray: *Audiovisual Archiving: Philosophy and Principles* (UNESCO, 2004) para. 3.3.2.4

brains put on wave motions in the air which register on our eardrums. Moving images are really a series of still images which we perceive to be in motion if sequenced rapidly enough, because of a phenomenon known as “persistence of vision”. Whether this information is delivered by analog or digital technology is basically irrelevant to that perception, even if our brains have to work a bit harder to decode the digital information: the temporal world around us, like time itself, is analog – not digital.

But the ‘digital turn’ has confronted us with some fundamental issues. I want to look at three of them. There’s the question of what we now do with our “legacy formats”. There’s the tendency to regard “content” and “carrier” as concepts that bear no relation to each other. And there’s the popular - and hence, to some extent, the professional - argument that digital technology offers a comprehensive solution to all preservation problems. Let me take these in reverse order.

The digital solution

Whenever anyone asserts “digital is the answer”, or words to that effect, my reaction is to ask “what’s the question”?

If we are talking about the possibilities of lossless digital-to-digital migration, and the immense vistas opened up for restoration, access, presentation, dissemination and re-purposing, digital technology has widened our horizons in ways we could never have previously imagined. That’s something I take as a given and don’t need to enlarge on.

But, as is so often the case with technological change, we get carried away with the positives and downplay the negatives. Only last year, at a professional conference, I listened to a speaker argue that the way of the future is to digitise *everything* and throw away the analog originals. Does that sound like a familiar sentiment? And in Australia – and presumably this happens all over the world – I am worried every time I see advertisements from service providers who tell the public they can “preserve their memories forever on DVD and CD” and happily offer, for a fee, a range of services to transfer one’s 8mm home movies, VHS and audio cassette tapes, even entire LP collections to digital carriers. What the customer receives back is actually a digital *selection* of data from the analog original. The consequence is too often that people throw away perfectly serviceable vinyls and rolls of film that would still be in excellent shape in 20 or 30 years – by which time, even if their DVDs and CDs have lasted the distance, they will no longer be able to buy the machines to play them.

Why do perfectly rational people seem to treat their memories so lightly? Do they fully understand what they are doing when they are about to consign their LPs and films to the dustbin? We are surrounded by the constant turnover of technology, yet we don’t necessarily apply its lessons in our daily decisions. And it seems, as archivists, we all too seldom learn from experience. We work is a fluid field: endless change has been the one constant of our profession. Except in the case of 35mm film - and even its days as a mass market product may now be ending - there is no *pioneering* or original image or sound format still active in the market. Carriers and systems of all kinds have come and gone, some lasting only a few years – or less! But that reality has never stopped us from seeing “the answer” on the latest technological bandwagon.

Remember that **preservation** is the totality of things necessary to ensure the permanent accessibility – forever – of an audiovisual document *with the maximum integrity*.³ It is contradictory to deliberately discard data – a process which can't be reversed – in the name of preservation. And yet....

Back in the 1960s a major television organisation, who shall be nameless, acquired the 35mm negatives and copyright of a significant cinema newsreel library. With future marketing in mind, the entire library was copied onto low band black and white videotape – the industry standard of the day. The film originals were considered expendable, given the belief that all future usage demand would be electronic. Within a few years, technology and television standards had moved on, and this video library quickly became unmarketable. It was only because an alert film archive had had the foresight to obtain possession of the film originals before they were destroyed that the newsreels are being preserved and are still available today in optimum form.

Do you know about 35mm cellulose nitrate film? It was the raw material of the professional film industry (not the home movie formats mentioned above) until about 1952. It's flammable and decomposes with age. In the 1960s, it became received wisdom in film archives that all nitrate film would have decomposed by 2000, so the race was on to find and copy nitrate film onto triacetate film before doomsday. In the process many archives destroyed their nitrate source material after copying – storing it was an expensive problem and, anyway, it wasn't going to last, was it?

³ Ibid para 3.2.3.6

It proved a disastrous policy. By the 1990s it was apparent that nitrate film, properly managed, lasts far longer than anyone had assumed. What's more, many of the new acetate copies were inferior and much information had been lost. The technology of film copying had leapt ahead, and far better copies of old material could now be made. And we had discovered that acetate film had its own decomposition problem: vinegar syndrome, which by 2000 was providing a new headache. Now polyester stock is in vogue: it's much more stable. We think.

In this copying and destruction process, the link between carrier and content had been destroyed. The characteristics of the nitrate prints and negatives – perhaps tinting and toning, or obsolete colour processes or sound systems – could only now be guessed at through what were often pale replicas. The archeological information on the nitrate originals – which often revealed much about contemporary production, distribution and presentation practice – was also gone.

Worst of all, archives had implanted a mythology and a mindset which is still active. Though contrary to today's archival ethics, nitrate destruction is still the official policy of some archives, and some current professional writers assume it is still standard practice everywhere.

We had built a policy on inadequate information and assumption. We had destroyed much of the film heritage in a misguided approach to saving it. And we gave ourselves a huge political and public relations problem.

Content - carrier

Which brings me to the link between carrier and content.

The media industries think in terms of “product” or “content”. Rather like the Cheshire Cat, it’s a somewhat disembodied, floating concept which exists independently of format: what you produce, sell and disseminate is what’s *derived from* the carrier, not the carrier itself.

But that’s not, in my view, an archival perspective. The carrier, be it a vinyl or shellac disc, a film, or other analog format, is an object and an artefact and needs to be treated as such. There is a connection between content and carrier, and beyond that, with their context. It’s not just that the carrier contains what we might call “archeological” information, or that its very appearance, smell and tactile feel was itself part of the audiovisual experience – to say nothing of the artistry of the packaging or the disc labels. The limitations of the carrier also shaped the very *nature* of the document itself, so the carrier-content link is crucial to appreciating the work itself.

Why are pop songs typically 3 or 4 minutes long? Because that was the maximum playing time of an Edison cylinder or ten-inch 78 rpm pressing. Why were theatrical newsreels and cartoons no more than 12 minutes long? Because that was the length of a standard film reel...1000 feet or 300 metres. Why was 35mm chosen as the standard width for motion picture film, thereby fixing the potential limits of picture resolution? Because this was half the width of the roll film manufactured for Eastman’s Kodak cameras, so it was a manufacturing convenience. And is it a coincidence that there are exactly sixteen horizontally rectangular 1 to 1.33 ratio frames to the 35mm foot, a number neatly just above the threshold for the persistence of vision?

There are recordings which cannot be properly understood without reference to the nature of the disc pressing: children's stories interrupted with phrases like "now turn the record over", or devices which make fun of the mechanical nature of the turntable and pickup arm – such as the playout loop on the Beatles' classic "Sergeant Pepper" LP. Once the content is dissociated from the original carrier and context these characteristics become mystifying.

There's an apocryphal story about an American researcher who discovered that Sergei Eisenstein used subliminal messages in his classic film "Battleship Potemkin" and developed a new critical theory of the film based on this discovery. His copy of the film – many generations away from the original - contained narrative titles that appeared as single frames between action shots, and clearly this information was meant to be conveyed subliminally, without the viewer being consciously aware of it. His theory was wrong, of course, but he didn't understand why.

Had he been aware of the context of the film's production, and the processing laboratory methods of the time, he would have realised that these "flash frames" merely indicated the points at which the narrative and dialogue titles (printed on different, high contrast film stock) were meant to be manually spliced in to each projection print. This was common practice in the days of silent films. But his viewing copy was clearly derived, many generations earlier, from the original negative, rather than a contemporary projection print which included the proper, spliced-in titles. When seen without this context, his copy could never convey this essential information.

Legacy formats

There's a new term – **legacy formats** – which has come into vogue in recent years. What does it mean to you? I *take* it to be a way of drawing a line between analog formats – the old, superseded and therefore “legacy” material – and digital formats, which are contemporary and developing and therefore, by implication, now the prime focus of our attention. Yet the divide isn't that simple, is it? There are already many digital formats that are superseded, dead and in some cases irrecoverable: and there are analog formats that are still active, as witness the continued production of vinyl and, of course, photographic film. I recently discovered an American record company that produces *new* Edison acoustic cylinder recordings. And by new, I don't mean reissues: I mean genuinely new, contemporary performances recorded by the original acoustic process. Are we in danger of having our actions and perceptions shaped by our terminology – rather than the other way around?

For more than a century, libraries and archival institutions have referred to the audiovisual media as “non book”, “non text” or “special” materials. It may have been a useful label in some contexts, but it carries an implication: moving image and recorded sound media are being defined *by reference to some other normative standard* (be they books, paper materials, manuscripts) rather than be defined *by what they are in their own right*. Does this definition shape perceptions – and therefore systems, funding and priorities – within those institutions?

Unfortunately, we are often less than precise in our use of terminology and – to our disadvantage – we send contradictory messages as a result. **Preservation** might be the term we misuse most of

all. How often does an archive say they *have preserved* this film or that recording, thereby implying that the task is done and finished for perpetuity? Yet we know that preservation is a never ending task – nothing has ever *been* preserved, it is only *being* preserved. Why don't we tell the precise truth, instead of confusing the issue by using the term as a synonym for copying, restoration or migration?

Challenges

We are naturally inclined to celebrate our achievements, but I fear we are less inclined to draw attention to our failures and mistakes – and therefore, it seems to me, less inclined and less able to learn from them. Perhaps that is only human. Regrettably, institutional or corporate histories in our field are still rare - so that also limits our ability to learn from those who went before us.

It may seem a little odd to suggest that there are lessons for us arising from the recent global financial crisis, until we recognise that even here – on this much larger canvas - governments and financial institutions have once again failed to learn from history. In his recent book *The Ascent of Money*,⁴ Niall Ferguson traces the evolution of the global financial system and the booms and busts which have affected society in general – and have therefore affected archives. He draws attention to the “skewed modes of thinking and learning that distinguish real human beings” and lead us to act in irrational ways. He quotes research that demonstrates the traps we fall into. For example:

⁴ Penguin Books, 2009, pp 346-7

Availability bias: which causes us to base decisions on information that is more readily available in our memories, rather than the data we really need

Hindsight bias which causes us to attach higher probabilities to events after they have happened (ex post) than we did before they happened (ex ante)

The problem of induction which leads us to formulate general rules on the basis of insufficient information

Confirmation bias which inclines us to look for confirming evidence of an initial hypothesis, rather than falsifying evidence that would disprove it

The effect heuristic whereby preconceived value judgments interfere with our assessment of costs and benefits

Bystander apathy which inclines us to abdicate individual responsibility when in a crowd.⁵

Why should the observations of an economist, and the irrational behaviour of the global economy, matter to us? Isn't the preservation of memory is a supremely rational activity, and a defining characteristic of the human species?

⁵ Eliezar Yudkowsky, *Cognitive biases potentially affecting judgment of global risks*, in Nick Bostrom and Milan Cirkovic (eds), **Global Catastrophic Risks** (Oxford University Press, 2008) pp 91-119

We would like to think so. Yet in the digital age, more than ever before, we archivists are at the mercy of economic forces. It is no longer just a matter of collecting and storing analog carriers and maintaining associated technology. The very survival of our digital collections, which must be constantly monitored and refreshed if their existence is to be continued, is dependent on the continuation of a highly complex technical infrastructure which we do not control, and which is, in turn, dependent on the survival of a workable global economy. Over the last few years we have looked over the edge of the precipice and we know that total meltdown is possible – even if it was averted this time. What about next time? For surely, there *will* be a next time.

We have a responsibility to think independently of fashions and to treat our collections holistically and with a long term view. I am convinced that our successors will be preserving analogue documents a hundred years from now, that they will be maintaining at least some of the associated technology, and that they will be extremely glad that their predecessors – that's us - had the foresight to save rather than discard. By then there will have a far greater appreciation of analog carriers as artefacts than now exists.

By 2110, how many of them will still survive? How many will still be being created?