

WikiLeaks and Web 2.0: privacy, security and other things that keep me awake ...

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Rapidly emerging Internet services and tools raise many questions for those of us concerned with memory, with ensuring the retention and future availability of records. This 'think piece' looks at the implications of two

prominent developments, WikiLeaks and Web 2.0 services, especially the social networking tools such as Facebook and Twitter. Those tools have quickly become the means for self-expression, staying in touch with others and creating business opportunities. Their capabilities have built new online communities and encouraged the sharing and use of much information held by both individuals and institutions. WikiLeaks has taken the desire for openness to new levels by providing a means for publishing leaked material globally and anonymously. These tools and their use challenge many of our assumptions, including conceptions of privacy and confidentiality, security and integrity, and, at least implicitly, authority.

Introduction

This paper is based on a deliberately provocative address I made at the Records Management Association of Australasia Convention in Sydney on 10 September 2008¹ and a series of master classes on 'Implementing Library 2.0: revitalising the way you serve and interact with users' offered around Australia and New Zealand in 2007 and 2008. What was fairly novel in 2007 and 2008 has now been significantly incorporated into many of our institutions' systems and practices and we are beginning to implement Web 3.0, the 'semantic web', which promises even more sophisticated services by giving well-defined meaning – context – to the information on the Web.² So why write about 'adopting Web 2.0' in a journal for professional archivists as we are entering the second decade of the twenty-first century?

Sufficient reasons lie in the profound changes which the principles of Web 2.0 have wrought in regard to the handling of all types of information. What was largely speculative three years ago is now having profound effects on interpersonal communications, mass media, political activity, access to information and many other aspects of human life around the globe. These rapidly proliferating changes raise many questions for those of us concerned with memory, with ensuring the retention and future availability of records, for those of us in the 'memory institutions' – libraries, archives and museums. For the purposes of this article, two examples will illustrate the critical juncture at which we find ourselves when charting the futures of those institutions: the widespread adoption of the Web 2.0 paradigm and the

WikiLeaks 'Cablegate' imbroglio. Both demonstrate a marked shift in the relationships between institutions and the public and new public expectations of institutions.

As one of the originators of the concept of Web 2.0, Tim O'Reilly, wrote:

Like many important concepts, Web 2.0 doesn't have a hard boundary, but rather, a gravitational core. You can visualize Web 2.0 as a set of principles and practices that tie together a veritable solar system of sites that demonstrate some or all of those principles, at a varying distance from that core.³

The principles to which O'Reilly refers are far-reaching in their effects:

- the web as platform;
- harnessing collective intelligence;
- data is the next Intel inside;
- end of the software release cycle;
- lightweight programming models;
- software above the level of a single device; and
- rich user experiences.

These principles are profoundly different from former information and communication technology environments which focused on establishing authoritative sites, capturing users and largely implementing proprietary software. Known as the Web 2.0 paradigm,⁴ the new environment is characterised by an *architecture of participation*, to use the term identified by O'Reilly.⁵ The incipient power of participatory social media was dramatically demonstrated a decade ago when the President of the Philippines, Joseph Estrada, was forced out of office for corruption in four days by demonstrators brought out by text messages saying 'Go 2 EDSA. Wear blk'.⁶ Social media have since diversified and proliferated and there are huge numbers of users around the world who have incorporated many of the media into their personal and occupational lives. Facebook alone has over 629 million users.⁷

The architecture which fosters the now widespread participative culture is expressed in many ways. Dynamic content creation has been relocated to users by enabling *user-generated content* coupled with the *power of the crowd* to correct and elaborate content, thus developing a sense of ownership among users. These facets and the underlying ubiquity of adequate bandwidth computer networks enable enormous data sets to be created – *data on an epic scale* – and used with almost instantaneous responsiveness. In this new interconnected giant ‘brain’, *network effects* and the interrelated capacity to serve the *long tail* become evident. The former indicates that the value of the services increases much more rapidly than growth in usage because of the multiple links between users. The latter points to the capability to serve minority and specialist interests and needs economically, a capacity absent from the mass production approach of the industrial economy. Together, the italicised facets identified by O’Reilly underpin his sixth and most striking characteristic, *openness*. Openness has combined with the participatory nature of Web 2.0 to shape the powerful new services which are game changers for both individuals and organisations.

Enabled by Web 2.0, they use the capabilities of the semantic web to provide rich and responsive environments that have an immediacy that former models for websites and online services lack. The tools which have emerged under this paradigm have quickly become means for self-expression, staying in touch with others and creating business opportunities. Their capabilities have built new online communities and encouraged the sharing and use of much information held by both individuals and institutions.

The stretch of social media

During December 2009, the average user of social media, such as Twitter and Facebook, spent more than five and a half hours per month using the services, an 82% increase from the three hours per month reported in December 2008.⁸ And Australian users topped that Nielsen study, recording 6.92 hours per month on average. Truly phenomenal numbers of users are accessing the services: Facebook has 152.2 million unique users in the United States, 9.8 million in Australia and 28.9 million in the United Kingdom – nearly half the population in

each case.⁹ Facebook users in Australia constitute 58.4% of the online population and are predominantly in the 18–24 and 25–34 age groups but with strong numbers in the 14–17 and 35–44 age groups. In other words, use of social media is well established among Australians of working age. In countries such as Indonesia, Iraq and Jordan, Facebook users constitute 100% of the online population, and 78.6% in Tunisia and 53.6% in Egypt.

These latter figures support commentary on the political influence of social media in the so-called Arab revolt of 2011 which has deposed presidents in Egypt and Tunisia and threatened those in other countries in that region.¹⁰ It appears that the ghost of Estrada is haunting today's dictators but the influence of social media extends beyond revolt. Sophisticated use of social media has been recognised as an important element in the election of the first African-American President of the United States, Barack Obama.¹¹ Similar strategies have been adopted elsewhere, all illustrating how social media have become important tools for both individuals and organisations and are used to exert influence on the behaviours of both.¹²

Archives and libraries

The rapid proliferation of Web 2.0 services has many implications for archives and libraries – along with our cousins in museums and records management¹³ – both in regard to how we conduct our business and engage with our clients and also with respect to changing the nature and distribution of the materials which we collect and curate. We cannot regard the 'new media' enabled by Web 2.0 as merely examples of mass culture which falls outside our purview, as modern-day pamphleteering only of interest to special collections. Those media are now at the heart of culture and the economy, domains of rapidly growing commercial and governmental activity as well as creative expression.

We rightly treasure the correspondence from shipboard during the long voyages to Australia, letters from the goldfields, cards from the front, but are we collecting today's equivalents in email, tweets, Facebook updates, YouTube uploads and so on? Are we capturing at least a proportion of that contemporary torrent of ideas, controversy and human contact? And, equally, are we archiving the records of

public and private organisations that appear only in digital forms? These and related issues have been discussed in the literature of the professions and there is some evidence of changes in practice as we reconsider the imperatives to collect and accession, but there is a long way to go.¹⁴

Web 2.0 services are transforming our institutions and the services they offer their clients. At University of Technology Sydney (UTS) Library <<http://www.lib.uts.edu.au>>, we are using most of the services briefly mentioned in the introduction to this article and others. We are using Facebook, Twitter and foursquare to engage more closely with our clients – especially but not only the younger and more ‘IT savvy’. YouTube and Flickr give us ways of promoting ourselves and seeking client input through creating videos and other digital media via our *Lib DigiStory* and *UTS Library Earth Hour* initiatives. Our *Read@UTS* program <<http://read.lib.uts.edu.au>> is built on Blogger, drawing students to improve their reading and communication skills by reading magazines, blogs and newspapers and using the social media tools to help discuss, summarise and critique the readings. Prezi, Google Docs and other tools help us plan and implement better through a process that is open to the world. QR Codes and pod- and vodcasting provide new ways to deliver information and support. But our core systems have also changed in response to the new expectations of participation and openness. A new catalogue launched in 2009 is consciously simplified, ‘Google like’, in appearance and operation, includes book covers like Amazon and enables discovery of much more than the traditional library collection located within the library building.

Commercial organisations are similarly transforming their business models by using Web 2.0 technologies. Specialist suppliers such as Shoes of Prey <<http://www.shoesofprey.com>>, a bespoke shoe seller, have flourished by artfully using the Web’s potential to extend and personalise marketing while traditional retailers are complaining about competition from Internet-sourced sales across borders.¹⁵ Government agencies and ministerial offices seek to use the Web effectively but are often outmanoeuvred by activist organisations such as GetUp! <<http://www.getup.org.au>>, which achieved signal victories during the 2010 Australian federal election.¹⁶

Similarly, the nearly century-old and august Australian War Memorial <<http://www.awm.gov.au>> has embraced social media including Facebook, Twitter, Flickr, Flickr Commons and YouTube. But, even more significantly, it has recognised that its resources need to be on the Web so it has digitised the nominal rolls of World War I and earlier Australian military personnel, POW records, unit war diaries and many other materials of interest to genealogists, historians and the general public. Many are freely available with a few clicks, others are digitised on demand following some checks for sensitivities.

WikiLeaks and Web 2.0

'Cablegate' was the *cause célèbre* of 2010–11 in which WikiLeaks released 251,287 United States embassy cables from Sunday 28 November 2010.¹⁷ The release caused outrage among US and foreign leaders and delight for civil libertarians. Most of the documents were recent, from 2004 to the present, and 47% had been classified 'secret' or 'confidential'.¹⁸ They included US diplomats' frank assessments of world leaders, attitudes to major issues and competitive information. Claimed to be the largest set of confidential documents ever made public, the release raised major questions about confidentiality, privilege and the right to know. Through its online facilities for submitting and accessing materials, WikiLeaks has taken the desire for openness to new levels by providing a means for publishing leaked material globally and anonymously. Summarising the effect of this new public channel for the release of privileged information, the UK Information Commissioner commented that the WikiLeaks disclosures offer a lesson to civil servants and ministers. They can no longer assume they operate in private and need to recognise that 'WikiLeaks is part of the phenomenon of the online, empowered citizen'.¹⁹

WikiLeaks is an example of Internet-enabled collaborative production which draws on the knowledge and skills of the 'crowd' to create and refine new user-generated content. Others include the unrelated *Wikipedia* which has turned the notion of an encyclopaedia on its head, video-sharing services such as YouTube or Vimeo, image-sharing services such as Flickr or Picasa, and self-publishing services such as Blogger or Wordpress. Other Web 2.0 services include the

runaway success of Facebook, which provides a new platform for social relationships, and its professionally focused counterparts such as LinkedIn and Plaxo as well as community-building services such as Twitter and foursquare. Google Docs, Prezi and SlideShare enable cooperative production and sharing of work and hobby materials. News feeds are changing the ways we access news, weather, stock prices and sport updates with profound implications for the old media – newspapers, radio and television. Pod- and vodcasting and many other tools provide a new environment for collaboration and new opportunities which transform our understanding of proximity and favour asynchronous interaction.

For collecting institutions and those charged with organisational recordkeeping, there is, however, a responsibility even greater than using Web 2.0 technologies to enhance and extend services. It is the responsibility to apply our professional knowledge and skills to capturing, preserving and making available in the future the burgeoning digital expression of today. Just as the collection of French revolutionary pamphlets acquired by the British Museum Library (now British Library) has informed historians from Thomas Carlyle²⁰ to Robert Darnton,²¹ we must ensure that the commentary and creativity of today must be available long into the future.

Initiatives to achieve this goal are multifarious and include nationally focused programs, transnational collaborations and specific ventures. An early national example is the National Library of Australia's Pandora <<http://pandora.nla.gov.au>>, which was established in 1996 to collect and provide long-term access to selected online publications and websites that are about Australia, are by an Australian author on a subject of relevance to Australia, or are by an Australian author of recognised authority and make a contribution to international knowledge. The US Library of Congress <<http://www.loc.gov/library/libarch-digital.html>> has a wealth of digital collections, including searchable archives of historic Web pages such as national elections and the 9/11 attacks on the World Trade Center and Pentagon and, most notably for this article, is accepting donation of the entire public archive of Twitter.²² Through such initiatives, these organisations and others are fulfilling their responsibilities as memory institutions.

Some go further by applying the new technologies to create new knowledge. Mash-ups, for example, 'allow individual users to combine content on the fly that is completely tailored to their needs and their working style'.²³ Going further than offering means of publication, enabling mash-ups permits the creation of new knowledge which we may then want to acquire. Similarly, allowing clients to tag or comment on records can generate new versions from existing content. The Aboriginal and Torres Strait Islander Data Archive (ATSIDA) at UTS Library, for example, seeks to use such technologies to enhance content by facilitating community commentary on research data, thereby creating new research objects – as well as moving well beyond the published materials on which libraries have largely focused.

The examples demonstrate that memory institutions are engaging with Web 2.0 both in ways that change their processes and encourage client participation and also by seeking to develop their collections to encompass the new media. We are creating new service environments that are dynamic in content, social activity and interaction and that establish virtual and physical environments that are attractive to both existing and new clients.²⁴ Implementation of interactive, responsive systems for content creation, visualisation, tagging and other applications allows us to foster the creation of new knowledge.

In so doing, the notion of 'collection' is being redefined in a less physically bounded form to situate each institution's 'holdings' within a broad, and essentially unbounded, knowledge sphere. This sea-change for the institutions is not without its problems, but the questions which at least metaphorically keep me awake extend beyond defining collections. They include troubling questions about the nature of collections in the digital age, issues of description, authority and control, and challenges to recruit and develop suitable staff.

Openness

Lauded by many as a triumph of open access to information, the release of the US Embassy cables may, paradoxically, lead to tighter controls over the handling of such communications and greater restraint on the frank expression of diplomats' views. Black and Bryant noted such regrettable consequences from a BBC publication of similar documents, the valedictory messages of senior UK diplomats.²⁵

But the disclosures have other lessons for memory institutions. Above all, they forcefully demonstrate that there are new agencies entering into the management and dissemination of records on a large scale. According to reports to date, the cables were submitted to WikiLeaks without authority by a US soldier for reasons which are not yet clear. Scale aside, such leaks are not unusual and often result in publication in part or whole. What would normally have been managed in accordance with security classifications and established access protocols in government archives slipped into the public arena with copies, or at least published versions, ending up in libraries and non-government archives. WikiLeaks has introduced a new agency, one which will accept leaked documents anonymously, assess them, possibly redact elements, compile guides and summaries, and publish facsimiles of the documents on a public website for all to see.²⁶ And that access is guaranteed against blockage or legal prohibition by the mirroring of WikiLeaks on 1,426 sites, as at the end of 2010.²⁷

Meanwhile, government archives continue to manage records in accordance with accepted practice and protocols and the application of 25-year, 30-year or longer embargoes on access. The contrast is stark and to the detriment of the official archives in the face of widespread expectations of openness and participation. No amount of huffing and puffing by leaders of government or officials will reverse those growing expectations. Archives and the authorities they operate under will have to come to terms with the expectations and to accept that much archived material can be made available without delay, or change or removal of elements. The practice of openness has its benefits for organisations. For example, there is little incentive to leak information or 'beat up' a story when documentation is freely available, as NSW City Rail has found since it placed on-time performance data online <http://www.cityrail.info/about/our_performance/otr_summary.jsp>.

Other implications of 'Cablegate' can be seen in the rapid call to arms to support WikiLeaks when the organisation was threatened by removal of financial services by MasterCard and Visa and its founder was arrested on a warrant from Swedish authorities to answer sexual assault charges.²⁸ The strength of the responses illustrated not only the depth of feeling in favour of openness but also the effectiveness of social media such as Twitter in promoting an online petition, support

for the organisation and its founder, and attacks on MasterCard and Visa for attempting to prevent donations to the organisation, allegedly at the behest of the US Government.

What keeps me awake?

The opportunities to engage with the new technologies are exciting and positive. So are the opportunities to better expose our collections through new tools for discovery and participation. But there are some concerns which we need to resolve in our individual and institutional practice and, collectively, across the community of memory institutions and professions. They include the conception of collection mentioned above, description and 'control' in a dynamic, borderless environment, and a range of legal issues.

'Collection' has been central to the definition of all the memory institutions whether it be the books and journals acquired by libraries, the records accessioned by archives or the material culture, art and other objects collected by museums. We have collected, described and controlled the materials in our collections and used them for research, exhibitions and consultation within frameworks of rules. But the boundaries which have been so firm and clear are fast disappearing as the Internet pervades our professional and personal lives.

For an academic institution such as UTS Library, the resources we now make available and which we consider to be included in our 'collection' are the long-held printed books, bound journals and audiovisual items but also e-books, e-journals and databases which we license, materials we place on YouTube, Flickr and so on, freely available open-access publications, and research data sets which we curate into national data archives. All are discoverable, at least to a degree, via our catalogue and therefore all may be said to be in our 'collection', but we do not own and certainly do not control all of them. This has led us to reconsider our conception of collection. We no longer believe it to be bounded by the physical walls of the library or even the virtual walls of licensing agreements but see it as a spectrum of guided access to the information materials which are needed to support learning and research at this university. Our 'collection' is thus located within the broad biblio/blogosphere and is defined by the tools and services we

provide to facilitate discovery of that which is relevant to the needs of the university community. Similar cases could be made for the collection of a museum which seeks to reflect contemporary life or an archive which is required to accession the records of an organisation's activities.

Accepting this fuzzy-bounded conception of collection and understanding that relevant materials are being created and transformed continually and dynamically, my next concern is about the application of our hard-earned expertise in description and control which makes the materials discoverable and, to some extent, usable. We clearly cannot sit down and work our way through groups and series when records are appearing and metamorphosing instantaneously and continuously. I, for example, sent 9,942 emails, more than 40 per average working day, from my work email address last year and received perhaps three or four times as many; add those from my personal address, text messages, tweets, Facebook and LinkedIn posts and so on and multiply by the 35,000 members of the UTS community and our records managers would have a digital mountain to collate, sift and describe – an impossible task.

Thankfully, Web 2.0 technologies are offering solutions. A key element lies in the scale of services such as YouTube on which individuals and organisations can mount their videos and have them exposed to search engines and other discovery tools. Such services are optimised to hold vast collections and provide ready access. YouTube claims that its users upload 24 hours of video every minute and that its Content ID scans over 100 years of video every day to identify possible copyright infringements.²⁹ This is a scale that vastly exceeds that of any archive or library and we do not need to replicate it because we can use YouTube, Flickr and the others. PictureAustralia <<http://www.pictureaustralia.org>>, for instance, exposes its historical photographs from the National Library of Australia and many other participating libraries via Flickr and also harvests relevant photographs uploaded to Flickr. So, within minutes of the 9 pm fireworks over Sydney Harbour on New Year's Eve, photographs appeared on PictureAustralia with at least basic metadata, rather than waiting years for the photographs to be acquired, accessioned, described and loaded. The use of a social

medium has enabled a quantum shift in the coverage and currency of an institutionally operated resource.

The other key element lies in user tagging and rating. Rather than attempt to describe and classify the materials ourselves we can assist users to label effectively and to rate or rank the materials. 'Folksonomies' could replace classification and metadata schemes as the main means of resource discovery. A ranking system based on user input could be a central part of the appraisal process, perhaps using metrics such as user hits, searches or downloads or possibly user ratings of the usefulness of content. But such a step will challenge our professional beliefs: could we trust content creators to decide whether there should be any access restrictions on the content they have created, with default values applying when they do not? What would be the dangers in adopting a strategy of 'taking down' challenged materials rather than trying to assess the risk of offence or other challenge before making them available? Could we rely on users to alert us to errors as YouTube does for potentially offensive materials rather than impose restrictions from the outset?

Privacy and confidentiality

These questions take us to the issues of privacy and confidentiality, probably *the* issue. Australia is a country with strong privacy legislation at both federal and state levels, and historically has had a low threshold for defamation actions coupled with a limited right of free speech. The First Amendment defences available in the United States are not generally available in Australia except for an implied right of comment on political matters. In some areas there are other considerations including the possibility of causing cultural offence to Indigenous peoples through the display of secret and sacred materials, or the inadvertent contravention of mourning practices through the presentation of names or images of deceased individuals. There is thus a real risk of challenge to some of the materials we might make available.

However, the proportion of materials which carry such risks is relatively small in most contexts so it is preferable to take a risk management approach to making materials freely available online instead of refusing

to make most available because of concern about the few. A risk management strategy involves broad categorisation, adequate but not exhaustive inquiry and a willingness to take down promptly to enable more thorough investigation and perhaps permanent restriction. In a recent case in point, a journalist gratuitously identified the suburb in which an interviewee lived and mentioned the subject's young children, potentially placing them at risk owing to the interviewee's profession. Prompt taking down satisfied the interviewee and provided an opportunity for the author to submit a revised version with the details removed. This takes us back to 'Cablegate': if a more open approach had been taken by making available the majority of the US Embassy cables with necessary omissions or changes, there would have been little incentive to leak them wholesale.

Privacy has other dimensions including those relating to identity protection. Many Internet users freely share private details in social media without giving a lot of thought to the personal information they are making available to the Internet world at large. Some sites provide tools that offer a degree of control over access to personal information - purporting to limit access to approved friends or networks. Tools to manage online identities permit Internet users to log on to many different websites using a single digital identity. Discovery tools can expose information in blogs and wikis as well as webpages, and can revive data from caches. Once we enter into the world of Web 2.0 applications, we need to consider how we can meet our privacy obligations while operating in an open and interconnected environment. [Further on this subject, see the article 'The thorniest area' by Paul Dalgleish elsewhere in this issue of *Archives and manuscripts*.]

Security and integrity

A related issue is the maintenance of security and integrity. Vodafone has recently and justly been criticised for lax security which could have exposed the personal details of up to four million customers.³⁰ This is not solely a Web 2.0 issue but a consideration inherent in the proper operation of computer systems including library lending systems which contain clients' addresses and other details. However, the proliferation of social media and the integration of ever more

complex systems have placed personal information in more locations and heightened the risk of unauthorised (or unconsciously authorised) access to the details coupled with their potential aggregation to create personal profiles. It is incumbent on system operators to ensure the secure handling of personal information, to warn users explicitly when they volunteer information which will be publicly visible, and as far as possible to inhibit the 'joining up' of data.

Regular updating of current data and measures to ensure the integrity of older data are essential. Although the data does not generally originate with the archive or library, we need to ensure that we maintain it properly in accordance with our professional standards. It is likely that these issues will gain greater force with the adoption of cloud technologies for storing and sharing data.³¹

Other interesting legal issues arise. For example, to quote ISO 15489: 2001, is the data generated through Web 2.0 applications 'information created, received, and maintained as evidence and information by an organization or person, in pursuance of legal obligations or in the transaction of business?' If so, how can we make it amenable to the efficient and systematic control of the creation, receipt, maintenance, use and disposition of records, including the processes for capturing and maintaining evidence of and information about business activities and transactions in the form of records?

Conclusion

The World Wide Web has transformed many aspects of life across the world, especially in the richer nations. Web 2.0 technologies have accelerated the pace of that transformation with far-reaching implications for individuals and organisations including archives and libraries. Exciting opportunities challenge us to reconsider our professional practices, to reimagine our professional aims for a networked world. But the technologies have also created rivals in areas in which we have not had competition previously, so we need to be nimble and to wholeheartedly promote and apply the key principles of the Web 2.0 world – openness and participation.

Endnotes

- ¹ Alex Byrne, 'Adopting Web 2.0: privacy, security and other things that keep me awake', presentation at the Records Management Association of Australasia 25th International Convention, Sydney, 7–10 September 2008.
- ² Tim Berners-Lee, James Hendler and Ora Lassila, 'The semantic web: a new form of web content that is meaningful to computers will unleash a revolution of new possibilities', *Scientific American*, 17 May 2001, available at <<http://www.scientificamerican.com/article.cfm?id=the-semantic-web>>, accessed 6 January 2011.
- ³ Tim O'Reilly, 'What is Web 2.0', O'Reilly website, 30 September 2005, available at <<http://www.oreilly.com/go/web2>>, accessed 6 January 2011.
- ⁴ Gary B Shelly, *Web 2.0: concepts and applications*, Course Technology, Boston, 2011; Paul D Jackson, *Web 2.0 knowledge technologies and the enterprise: smarter, lighter, cheaper*, Chandos, Oxford, 2010.
- ⁵ Paul Anderson, 'What is Web 2.0? Ideas, technologies and implications for education', JISC, 2007, available at <<http://www.jisc.ac.uk/media/documents/techwatch/tsw0701.pdf>>, accessed 25 August 2007; Tim O'Reilly, 'The architecture of participation', O'Reilly OnLamp.com, 6 April 2003, available at <<http://www.oreillynet.com/pub/wlg/3017>>, accessed 5 January 2011.
- ⁶ Clay Shirky, 'The political power of social media', *Foreign Affairs*, January/February 2011, available at <<http://www.foreignaffairs.com/articles/67038/clay-shirky/the-political-power-of-social-media>>, accessed 12 January 2011.
- ⁷ Nick Gonzalez, 'CheckFacebook.com', 5 April 2011, available at <<http://www.checkfacebook.com/>>, accessed 5 April 2011.
- ⁸ Lance Whitney, 'Twitter, Facebook use up 82 percent', *CNet News*, 22 February 2010, available at <http://news.cnet.com/8301-1023_3-10457480-93.html>, accessed 5 April 2011.
- ⁹ Gonzalez.
- ¹⁰ Ethan Zuckerman, 'The first Twitter revolution? Not so fast. The Internet can take some credit for toppling Tunisia's government, but not all of it', *Foreign Policy Magazine*, 14 January 2011, available at <http://www.foreignpolicy.com/articles/2011/01/14/the_first_twitter_revolution>, accessed 5 April 2011; and Sharon Gaudin, 'Social networks credited with role in toppling Egypt's Mubarak', *Computerworld*, 11 March 2011, available at <http://www.computerworld.com/s/article/9209159/Social_networks_credited_with_role_in_toppling_Egypt_s_Mubarak>, accessed 5 April 2011.
- ¹¹ Rahaf Harfoush, *Yes we did! An inside look at how social media built the Obama brand*, New Riders, Harlow, UK, 2009.
- ¹² Erik Qualman, *Socialnomics: how social media transforms the way we live and do business*, Wiley, Hoboken NJ, 2011.
- ¹³ Steve Bailey, *Managing the crowd: rethinking records management for the Web 2.0 world*, Neal-Schuman, New York, 2008.
- ¹⁴ See, for example, ArchivesLive!, available at <<http://archiveslive.ning.com>>, and the Archives and Records Google Group available at <<http://groups.google.com/group/archives-and-records-australia>>, both accessed 5 April 2011.
- ¹⁵ Tom Reilly, 'Shoe is on the other foot as savvy internet shoppers give traditional retailers the boot', *Sydney Morning Herald*, 5 January 2011, available at <<http://www.smh.com.au/business/shoe-is-on-the-other-foot-as-savvy-internet-shoppers-give-traditional-retailers-the-boot-20110104-19f4e.html>>, accessed 5 January 2011.

- ¹⁶ 'High Court upholds GetUp! case', ABC News, 6 Aug 2010, available at <<http://www.abc.net.au/news/stories/2010/08/06/2975602.htm>>, accessed 5 January 2011.
- ¹⁷ 'Cablegate: 250,000 US embassy diplomatic cables', WikiLeaks, 28 November 2010, available at <<http://213.251.145.96/cablegate.html>>, accessed 4 January 2011.
- ¹⁸ *ibid.*; 'WikiLeaks', *Wikipedia*, available at <http://en.wikipedia.org/wiki/WikiLeaks#cite_note-9>, accessed 4 January 2011.
- ¹⁹ Polly Curtis, 'Ministers must "wise up not clam up" after WikiLeaks disclosures', *Guardian*, 30 December 2010, available at <<http://www.guardian.co.uk/politics/2010/dec/30/wikileaks-freedom-information-ministers-government>>, accessed 4 January 2011.
- ²⁰ Thomas Carlyle, *The French revolution: a history*, Chapman & Hall, London, 1871–73.
- ²¹ Robert Darnton, 'An early information society: news and the media in eighteenth-century Paris', annual address of the president of the American Historical Association delivered in Chicago on 5 January 2000, *American historical review*, vol. 105, no. 1, pp. 1–35, February 2000, available at <<http://www.historycooperative.org/journals/ahr/105.1/ah000001.html>>, accessed 5 January 2011.
- ²² Matt Raymond, 'The library and Twitter: an FAQ', Library of Congress Blog, 28 April 2010, available at <<http://blogs.loc.gov/loc/2010/04/the-library-and-twitter-an-faq>>, accessed 5 January 2011.
- ²³ Oliver Young of Forrester Research, quoted in Judith Lamont, 'Mashup essentials', *KMWorld*, 30 May 2008, available at <<http://www.kmworld.com/Articles/Editorial/Feature/Mashup-essentials--49236.aspx>>, accessed 20 December 2010.
- ²⁴ Paul Miller, 'Web 2.0: building the new library', *Ariadne*, vol. 45, 30 October 2005, available at <<http://www.ariadne.ac.uk/issue45/miller/intro.html>>, accessed 5 January 2011.
- ²⁵ Alistair Black and Antony Bryant, 'Knowledge management and diplomacy: reflections on the demise of the valedictory despatch in the context of an informational history of the British Diplomatic Service', *First Monday*, vol. 16, no. 1, 3 January 2011, available at <<http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/view/3339>>, accessed 4 January 2011.
- ²⁶ 'About: What is WikiLeaks?', WikiLeaks, available at <<http://wikileaks.ch/About.html>>, accessed 6 January 2011. In regard to the WikiLeaks policy of redacting information, see 'Debunked: "WikiLeaks Did Not Redact The Afghanistan War Logs"', *WL Central: WikiLeaks news, analysis and action*, 29 November 2010, available at <<http://wlccentral.org/node/379>>, accessed 2 May 2011.
- ²⁷ 'Mirrors', WikiLeaks, available at <<http://213.251.145.96/Mirrors.html>>, accessed 6 January 2011.
- ²⁸ 'Anonymous hackers hit Visa, MasterCard and Sarah Palin in WikiLeaks revenge', *The Australian*, 9 December 2010, available at <<http://www.theaustralian.com.au/in-depth/wikileaks/anonymous-hackers-hit-visa-mastercard-in-wikileaks-revenge/story-fn775xjq-1225968083650>>, accessed 6 January 2011; 'The curious sex case against Julian Assange', *The Australian*, 8 December 2010, available at <<http://www.news.com.au/world/assange-rape-charges-stem-from-two-one-night-stands-in-sweden/story-e6frfkyi-1225967407341#ixzz1AJl9Q3DA>>, accessed 6 January 2011.
- ²⁹ 'Statistics', YouTube, available at <http://www.youtube.com/t/press_statistics>, accessed 6 January 2011.
- ³⁰ Peter Martin and Lucy Battersby, 'Vodafone may be liable on privacy breach', *Sydney Morning Herald*, 10 January 2011, available at <<http://www.smh.com.au/technology/security/>>

vodafone-may-be-liable-on-privacy-breach-20110109-19jup.html>, accessed 10 January 2011.

³¹ Michael Armbrust, Armando Fox, Rean Griffith et al., 'A view of cloud computing', *Communications of the ACM*, vol. 53, no. 4, April 2010, pp. 50-8, available at <*http://cacm.acm.org/magazines/2010/4/81493-a-view-of-cloud-computing/fulltext*>, accessed 10 January 2011.