Agenda

- New forms of scholarly communication
- Lunch
- e-Research methods and case studies
  - Collaboration and virtual organisations
  - Data-driven research (from capture to publication)
  - Computational methods and inference
  - Data processing and visualisation
  - Parametric modelling
- Open discussion
- Optional tour: 3D Alive (3D Applied Laboratory for Immersive Visualisation Environments)
New forms of scholarly communication
HED5071, 22 February 2012

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Scholarly communication consists of many interconnected activities. These take place within an institutional, political, social and economic infrastructure. As the means for knowledge sharing and publication have changed, so have the relationships among the many stakeholders in scholarly communication.

‘Big deal’ publishing: advantages

- Perceived legitimacy
  - Well-established
  - Peer review as a ‘stamp of quality’
  - Sources of citation metrics that form the basis of research quality assessments

- Access to more titles – encourages usage, good for interdisciplinary work

- Suited to consortial deals that enable libraries to share costs
‘Big deal’ publishing – disadvantages

- Cost (to produce)
  - The ‘gift economy’ – writing, reviewing and editorial board duties usually done at no cost to publishers
  - Proportion of ‘value add’ provided by publishers in the digital era (estimates up to 30% but often much lower)

- Costs and pricing models (to subscribe)
  - High costs, and increasing
  - Libraries locked into ‘bundles’ of journals and e-books, which makes cancelling & substituting difficult and means smaller publishers are pushed out of the market
  - Large profit margins for an oligopoly of big players (Elsevier, Springer, Wiley)
Research Information Network [UK]. 2008. Activities, costs and funding flows in the scholarly communications system.
Houghton et al. 2006. Research Communication Costs in Australia: Emerging Opportunities and Benefits

- Writing ~$480 million (HERDC only)
- Peer review ~$120 million
- Editorial activities ~$37 million
- Reading ~$2.7 billion (“reading to write” by publishing researchers)
- Funding applications ~$160 million
- Estimated production costs per item
  - ~$13,000 for each refereed journal article, conference paper or book chapter
  - ~$150,000 for each scholarly book

Current system – disadvantages (2)

- **Ownership**
  - Creators asked to sign away the rights to work that is usually the result of publicly funded research

- **Integrity, e.g. “custom publications”**
  - e.g. 2009 *Australasian Journal of Bone and Joint Medicine*, created by Elsevier and paid for by Merck

- **Access**
  - Time taken from submission to publication
  - Concern about preservation of scholarly record
  - Publicly funded research behind ‘paywalls’ means some miss out e.g. patient advocacy groups, evidence-based professions, researchers in poorer countries
Emerging channels

- Institutional repositories (mostly publications)
- Data archives and repositories
- Syndication and dissemination
- Open access publishing
  - Journals
  - Books
- Informal scholarly communication via social media
Institutional repositories

- Common software platforms now 10 years old
- **Register of Open Access Repositories** lists 2800 repositories globally: many are institutional, some are disciplinary or cross-disciplinary
- Have a traditional focus on providing open access to publications (often pre-prints) and theses
- More recent moves into managing digital collections (e.g. photographs) and research datasets
Benefits of institutional repositories

- Persistent storage and a persistent identifier enhance citability – not dependent on an institutional or personal web address or email
- Open access citation advantage
- Other impacts – downloads, collaboration opportunities, new audiences
- Provide space for ‘long tail’ resources in a wide range of disciplines (including those without disciplinary repositories)
## Open access citation advantage

<table>
<thead>
<tr>
<th>Measure</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Studies finding a positive Open Access citation advantage</td>
<td>27</td>
</tr>
<tr>
<td>Studies finding no Open Access citation advantage (or an OA citation disadvantage)</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Size of OA citation advantage when found (and where explicitly stated by discipline)</th>
<th>% increase in citations with Open Access</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physics/astronomy</td>
<td>170 to 580</td>
</tr>
<tr>
<td>Mathematics</td>
<td>35 to 91</td>
</tr>
<tr>
<td>Biology</td>
<td>-5 to 36</td>
</tr>
<tr>
<td>Electrical engineering</td>
<td>51</td>
</tr>
<tr>
<td>Computer science</td>
<td>157</td>
</tr>
<tr>
<td>Political science</td>
<td>86</td>
</tr>
<tr>
<td>Philosophy</td>
<td>45</td>
</tr>
<tr>
<td>Medicine</td>
<td>300 to 450</td>
</tr>
<tr>
<td>Communications studies (IT)</td>
<td>200</td>
</tr>
<tr>
<td>Agricultural sciences</td>
<td>200 to 600</td>
</tr>
</tbody>
</table>

Swan (2010). **The Open Access citation advantage: Studies and results to date.**
Ray Frost, from QUT’s school of physical and chemical sciences, said QUT’s repository gave him a new global readership. His papers were being downloaded on average 2,080 times a month as early as 2006.

Benefits of free access

EVEN a modest move towards making research results freely available could deliver $628 million a year in economic and social benefits to the nation.

The claim is made by the first study to weigh the cost and benefit of a shift away from the system of scholarly communication based on expensive journals that are restricted to subscribers.

“There’s a lot of interest internationally in this report to the federal Department of Education, Science and Training because people haven’t done it before,” said lead author John Houghton of the Centre for Strategic Economic Studies.

Assuming a 5 per cent increase in access and efficient use of research results, the report estimates a $151 million annual benefit for public sector R&D, $88 million for higher education R&D and $12 million for research funded by the Australian Research Council.

The findings come as the ARC and National Health and Medical Research Council consider adopting open access policies to encourage - but not require - grant recipients to disseminate their results widely.

Colin Steele, another author of the DEST report and former librarian of...
Things to consider

- Repository policies and systems
  - Scope
  - Goals
  - Fit with other systems

- Repository processes
  - Deposit methods – self-deposit or mediated
  - Standards for files and the associated metadata
  - Licensing and re-use
  - Dissemination targets

- Self-archiving policy of source journals
Journal policies on self-archiving

<table>
<thead>
<tr>
<th>RoMEO colour</th>
<th>Archiving policy</th>
<th>Publishers</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>green</strong></td>
<td>Can archive pre-print and post-print</td>
<td>278</td>
<td>26</td>
</tr>
<tr>
<td><strong>blue</strong></td>
<td>Can archive post-print (ie final draft post-refereeing)</td>
<td>327</td>
<td>31</td>
</tr>
<tr>
<td><strong>yellow</strong></td>
<td>Can archive pre-print (ie pre-refereeing)</td>
<td>87</td>
<td>8</td>
</tr>
<tr>
<td><strong>white</strong></td>
<td>Archiving not formally supported</td>
<td>372</td>
<td>35</td>
</tr>
</tbody>
</table>

Summary: **65%** of publishers on this list formally **allow** some form of self-archiving.

SHERPA/RoMEO

- Database of journal self-archiving policies (currently 1064 publishers)
- 65% of publishers on the list allow self-archiving in some form
Data archives & repositories

- Increasing funder and institutional requirements
- The Open Access Directory has a large list - often have a disciplinary focus
Benefits of data archives & repositories

- Better suited to large datasets
- Can meet some discipline-specific needs better than institutional repositories
- Persistent storage and a persistent identifier, and possibly links with related publications
- Open access citation advantage
- Other impacts – downloads, collaboration opportunities, new audiences
- Opportunity to share negative results
Sharing Detailed Research Data Is Associated with Increased Citation Rate

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Abstract Top

Background
Sharing research data provides benefit to the general scientific community, but the benefit is less obvious for the investigator who makes his or her data available.

Principal Findings
We examined the citation history of 85 cancer microarray clinical trial publications with respect to the availability of their data. The 40% of trials with publicly available microarray data received 85% of the aggregate citations. Publicly available data was significantly (p = 0.006) associated with a 69% increase in citations, independently of journal impact factor, date of publication, and author country of origin using linear regression.
Publish negative data

In doing this, other researchers will not duplicate the work but instead may publish with your previously wasted figures.

"Data which are determined to be a matter of public record and can therefore be made freely available, without restriction, are categorised as Public Access."

"Data must be properly curated throughout its life-cycle and released with the appropriate high-quality metadata."

"NERC is committed to supporting long-term environmental data management to enable continuing access to these data."
Things to consider

- Which archive or repository is most suitable?
- Are there any ethical or commercial restrictions that need to be managed?
- Standards for files and the associated metadata
- Licensing and re-use
Dissemination & syndication

- Institutional repositories disseminate metadata (catalogue-like info) to general search services, as well as those with specific material types (images, theses) and disciplines.
- Data archives & repositories disseminate metadata too, often to discipline and cross-discipline aggregators.
Open access journals

- No financial, legal or technical barriers for reader
- Two main categories
  - Author fee based: Author (or institution or grant) pays. Cost varies, with many around US$1250-2000. Recent funding rule changes mean that ARC grants can now be used to pay these fees.
  - No-fee: many different models may be subsidised by a university, library, learned society, research institute, or supported by subscriptions, advertising, volunteers.
- Hybrids: open access journals published by commercial publishers, access is open but often licensing for re-use is more restrictive
Open access journals

- **Directory of Open Access Journals** currently lists 7509 journals, 121 from Australia (1461 added last year)
- Restricted to peer-reviewed research publication
Open access books

- Different models – university presses often hybrids
- Monash University Publishing
  - High quality, not ‘vanity publishing’
  - Authors receive royalties
  - Proposals are assessed by Editorial Boards, and manuscripts are peer-reviewed
  - Free open access electronic version (some licensing restrictions)
  - Print copies sold online and through bookshops
  - Publications count in HERDC
Things to think about

- Audiences for your work – not just researchers
- Publisher policies, and whether you support them
- Journal/publisher reputation vs other measures of success
Social media

Research Information Network (UK). 2010. If you build it, will they come? How researchers perceive and use web 2.0

- Most researchers use web 2.0 tools and services at least occasionally – discipline effects more significant than age or seniority
- But frequent or intensive use is rare – quality, IP, time
- Some researchers regard blogs, wikis and other social media as a waste of time or even dangerous
- Key questions are the values and benefits researchers will get and how social media fits with use of established tools and services
About this Dataset

This dataset lists the ~ 58k tweets that mentioned a scientific article (broadly speaking anything with a DOI, PMID or arxiv ID) between the 1st and 31st of July 2011.

Recall isn't 100%: my best estimate is that it's missing another ~ 6k tweets where the article couldn't be identified, the link was malformed or the journal involved is new or gets very low traffic.

Twitter's TOS prohibit re-distribution of the tweets themselves but the dataset contains the extracted links, the tweet ID and some information about the tweeter (screen name, country & lat/lng derived from their location using Yahoo! Placemaker).

The links, pmids, dois and arxiv_ids columns can contain more than one value and are pipe (|) delimited.

The RTs column contains a pipe delimited list of screen names credited with a RT / MT / via in the tweet body.

If you use this dataset please credit http://www.altmetric.com somewhere - doesn't need to be a prominent link or a graphic or anything, some text tucked away on an about page will do!
Things to think about

- Social media as a supplement to other scholarly comms
- Best tool for your purpose – blog, wiki, Twitter?
- Benefits (early feedback, networking opportunities, profile) and risks (loss of control)
Research metrics and rewards

- **Institution**
  - Quantity – **Higher Education Research Data Collection** (annual review of research income and research publications)
  - Quality – Excellence in Research for Australia
    - Impact determined by bibliometrics
    - Evidence assessed by peers for significance

- **Individual**
  - Academic Promotion quantitative and qualitative assessments
Rewards system – perceived issues

- Scope – what gets included /excluded (e.g. datasets)
- Interdisciplinary work - may not ‘fit’ review panels and Field-of-Research codes
- Work in small fields
- Non-traditional outputs
  - Datasets
  - Creative works
  - Events
- Impact outside of academia
A New Dolphin Species, the Burrnan Dolphin *Tursiops australis* sp. nov., Endemic to Southern Australian Coastal Waters

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Abstract

Small coastal dolphins endemic to south-eastern Australia have variously been assigned to described species *Tursiops truncatus*, *T. aduncus* or *T. maugeanus*; however the specific affinities of these animals is controversial and have recently been questioned. Historically ‘the southern Australian *Tursiops*’ was identified as unique and was formally named *Tursiops maugeanus* but was
Formal metrics
Alt-metrics

10.1371/journal.pone.0024047
Charlton-Robb, Gershwin, Thompson, Austin, Owen, McKechnie (2011) A New Dolphin Species, the Burrunan Dolphin Tursiops australis sp. nov., Endemic to Southern Australian Coastal Waters
PLUS ONE

Charlton-Robb, Gershwin, Thompson, Austin, Owen, McKechnie (2011) A New Dolphin Species, the Burrunan Dolphin Tursiops australis sp. nov., Endemic to Southern Australian Coastal Waters

11416 1316 92 76 74 58 44 37 33 24 21 17 6 2 2 2 1 1 1 1

More detail on available metrics. Missing some artifacts or metrics? See current limitations.

Latest tweeted reports:
@annmarigold RT @astl_org: Comprehensive report on systems for gathering altmetrics; includes @total_impact now v3.09.1 7/4

Latest changes on GitHub
Jan 21, 2012: fixed ID importing bugs
Dec 17, 2011: easy install using deploy.sh script; memcached for caching
Things to think about

- Ways you could use emerging alt-metrics tools to your arguments about your research impact
- Informal benefits – a high profile might mean more opportunities for collaboration, publishing, grants from industry, government, not-for-profit…
- If you feel strongly about this consider how you might get involved
So, what does this all mean for you?

Looking on the bright side
- Exciting time in the history of scholarly comms
- Potentially greater impact for your work - more opportunities to publish & disseminate, bigger and broader audiences

But…
- More choices you need to make
- Different channels have different requirements and will achieve different ends
- It takes time for policy & practice to catch up with technology, especially with regards to rewards system