What Next for Libraries?
Making Sense of the Future

Reflections on the past & thoughts on the future

Talk by Brian Kelly, UKOLN at the EMTACL 2012 conference
EMTACL12

What Next for Libraries?
Making Sense of the Future

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About Me

Brian Kelly

- Based at UKOLN, University of Bath
- Involved in Web development since 1993
- Excited about the potential of the Web to support University activities
- Realistic about the challenges!

The Innovation Support Centre (ISC) at UKOLN

- Funded by the JISC
- Supports innovation in higher & further education
- Providing the JISC Observatory in conjunction with JISC CETIS
About This Talk

This talk:

• Reviews the future by looking at the past
• Distinguishes between *invention*, *innovation* and *improvement*
• Highlights importance of evidence-gathering in identifying relevant areas of innovation & ways of making improvements
• Describes work funded by JISC in UK
• Outlines a methodology which others can adopt
• Welcomes feedback during talk using Twitter #emtacl12
Brian Kelly, UKOLN, University of Bath, Bath, UK
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ABSTRACT
The JISC Observatory provides horizon-scanning of technological developments which may be of relevance to the UK’s higher and further education sectors.

The JISC Observatory Team has developed systematic processes for the scanning, sense-making and synthesis activities for the work. This paper summarises the work of the JISC Observatory and related activities carried out by the author.

The paper outlines how the processes can be applied in a local context to ensure that institutions are able to gather evidence in a systematic way and understand and address the limitations of evidence-gathering processes. The paper describes use of open processes for interpreting the evidence and suggests possible implications of the horizon-scanning activities for policy-making and informing operational practices.

The paper concludes by encouraging the take-up of open approaches to the gathering and interpretation of the evidence used to inform policy-making.

2. JISC OBSERVATORY TEAM PROCESSES

The JISC Observatory processes are summarised below:

Evidence-gathering: The JISC Observatory’s scanning activities draw on tacit knowledge and informed experience of staff working at UKOLN and CETIS. The staff make use of evidence-gathering processes which can help to identify early signs of signals and trends as well moves away from well-established technologies.

The evidence-gathering processes are primarily the responsibility of JISC Observatory team members, who carry out such activities as part of their regular work in keeping up-to-date with technological developments. In addition interviews are carried out which aim to provide professional insights into future developments across the higher education sector.

An example of such interviews is available on UKOLN’s JISC blog in which Dr. Mark Cox of King’s College London gives his thoughts on how mobile devices are re-shaping support for e-learning in Higher Education [1].

Sense-making: The evidence gathered is then interpreted. An open approach to the sense-making activities is used to help to maximise involvement in the sense-making processes. It should be noted that the discussions about the relevance of the sense-making processes include addressing the mechanisms used to gather the evidence, including survey ‘paradata’ [2] as well as the evidence itself.

Synthesis: Synthesis work is provided materials for the JISC Observatory’s target audiences. Such synthesis work includes the commissioning and production of JISC Observatory TechWatch reports [2]. At the time of writing, TechWatch reports on Augmented Reality for Smartphones, Delivering Web to Mobile and Preparing for Data-driven Infrastructure have been published with an additional reports on Preparing for Effective Adoption and Use of eBooks in Education currently being reviewed.

In addition to the JISC Observatory website and blog, team members also make use of their own existing blogs in order to post about technological developments for their own blog communities. Such posts are made accessible from the JISC Observatory Web site.

[1] "http://observatory.jisc.ac.uk/

Your Thoughts

What technical developments might be important?

Making sense of the future!

Tweet your ideas
Feel free to add implications for users …
and implications for libraries
Discuss the implications …
such as legal issues, business models, …

#emtacl12 and
#future or #wtf
Monorail, Incorporated built a short test track of their suspended system at Arrowhead Park in Houston, Texas. Each bogie was powered by a 310-horsepower Packard automobile engine. The driver was seated high above the passenger carriage on one of the two bogies. After eight months of testing, the track was dismantled and rebuilt at the Texas State fairgrounds where it ran for many years. Its promoters claimed it could reach speeds of 160 km but no Skyway transit installations were ever built.

The future was exciting in 1956!
What I Expected in the Future
Awoken at 3 am on 16 June 1969 to watch lunar landing on black and white TV.

But the future was exciting!
1969 was exciting!
What I Expected in the Future

lunar colony future
The Present: Better than Predicted

Star Trek’s predicted mobile phones but not smart phones!

Nokia 8110 “stole the show in 1998”
Has the Future Arrived?
The Future from the Past

The future is exciting!
Nasa Mars landing: Curiosity arrives on the Red Planet

Curiosity, a metric-tonne rover, has landed successfully on Mars, transmitting the first images to Nasa just after 6.30am.
Has the Future Arrived?

Alton Towers, England

| Opened 1987 | 3.2 km | 2 stations |

You can't pick up a subway system and move it across the planet. In that respect, light rail isn't very mobile either. But it's not a problem with monorail. The track is modular, easily transported and the pylons do not require a lot of ground work if moved. These Von Roll II trains now carry passengers from a remote parking lot to the entrance of this popular park in England, but they once carried thousands of passengers at Expo 86 in Vancouver, Canada. The seven trains carry up to 100 people each. System capacity is 4,800 passengers per hour. Top speed of this peoplemover class system is 27 kph. The monorail system was officially opened by William Shatner (Captain Kirk of Star Trek) on August 13, 1987.
Please note that the monorails listed in these pages are MULTI-STATION systems. We do not include the dozens of recreation or view-giving minirails here. Our efforts are primarily geared towards proving monorail's ability to carry people from point to point as TRANSIT.

<table>
<thead>
<tr>
<th>System</th>
<th>A Few Words</th>
<th>Opening</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wuppertal, Germany</td>
<td>World's oldest operating monorail system.</td>
<td>1901</td>
</tr>
<tr>
<td>Beaulieu, England</td>
<td>Two station attraction connector.</td>
<td>1974</td>
</tr>
<tr>
<td>Dortmund, Germany</td>
<td>Peoplemover-scale suspended monorail.</td>
<td>1984</td>
</tr>
<tr>
<td>Alton Towers, England</td>
<td>Transplanted from Canada.</td>
<td>1987</td>
</tr>
<tr>
<td>Chester Zoo, England</td>
<td>Not just a view of animals.</td>
<td>1991</td>
</tr>
<tr>
<td>Europa Park, Germany</td>
<td>Theme park to parking lot transportation.</td>
<td>1996</td>
</tr>
<tr>
<td>Mirabilandia, Italy</td>
<td>Theme park transportation.</td>
<td>1999</td>
</tr>
<tr>
<td>Magdeburg, Germany</td>
<td>Garden park transportation.</td>
<td>1999</td>
</tr>
<tr>
<td>Düsseldorf International, Germany</td>
<td>Suspended monorail connector between a rail station and the airport terminal.</td>
<td>2002</td>
</tr>
<tr>
<td>Moscow, Russia</td>
<td>Intamin system linking major city sights and Metro stations.</td>
<td>2005</td>
</tr>
<tr>
<td>Zaragoza, Spain</td>
<td>Short shuttle located at Plaza Imperial</td>
<td>2008</td>
</tr>
<tr>
<td>Ankara, Turkey</td>
<td>Metro/development minirail connector</td>
<td>2012</td>
</tr>
<tr>
<td>Bologna, Italy</td>
<td>Rail/Airport connector</td>
<td>2013</td>
</tr>
</tbody>
</table>
Has the Future Arrived?

Predictions & expectations from the past:
  • Have arrived
  • Sometimes have exceed expectations
  • Often fail to become widely embedded

Can we learn from past expectations of the future?

Note importance of evidence:
  “Our efforts are primarily geared towards proving monorail's ability to carry people from point to point as TRANSIT”
Rich Opportunities

Web 2.0 provided many opportunities to support teaching & learning and research activities.
The Mid 2000s

Even the Daily Telegraph in 2006 gave a (qualified) conclusion of “Good” to Labour Government’s investment in education.
From the Sea of Tranquility to the Perfect Storm
Time of Growth 😊

1990s & early 2000s saw:

• Increased funding across education sector
• Significant developments in IT sector
• Willingness by senior managers & funding bodies to invest in innovative IT developments (e.g. JISC development programmes)

“Great proposal – we’ll fund it”
Time of Growth is Over 😞

Late 2000s and beyond:

- Decreased funding across education & public sector
- Acknowledgements that innovation can provide growth and cost savings
- Significant developments continue in IT sector
- Investment in innovative IT developments need to be based on evidence of benefits & likelihood of success

“You want how much? And no evidence it will work! You’re crazy!”
Innovation is the creation of better or more effective products, processes, services, technologies, or ideas that are readily available to markets, governments, and society. Innovation differs from invention in that innovation refers to the use of a better and, as a result, novel idea or method, whereas invention refers more directly to the creation of the idea or method itself. Innovation differs from improvement in that innovation refers to the notion of doing something different (Lat. innovare: "to change") rather than doing the same thing better.

Invention: Creating something new
Innovation: Using something new
Improvement: Using something that exists in a better way
The Context

In the future mobiles will be bigger & smaller & faster; Data will be Big and content and services will be open. Lots of opportunities for librarians :-(

The future looks promising. Give me evidence for a report for the Vice-Chancellor - she's keen on evidence. She's also looking to make cuts!

Fine. I'll look for industry trends and see what our peers are doing. I'm sure I'll find evidence of the importance of libraries in supporting these areas!
JISC Observatory:

• JISC-funded initiative
• Systematises processes for anticipating and responding to projected future trends & scenarios
• Provided by JISC Innovation Support Centres at UKOLN and CETIS
• See <http://blog.observatory.jisc.ac.uk/>
Scanning Activities

Scanning developments:

- **Observatron list:** Sharing snippets we encounter in our daily monitoring activities.

- **Interviews:** Short interviews with developers, practitioners, … who share their thoughts on how developments may affect their working practices.
Scanning Activities

• **Blog posts:**
  Posts published on JISC Observatory blog and on existing blogs.

• **Monitoring trends:**
  Monitoring trends in order to:
  - Benchmark current usage patterns
  - Identify trends
  - Identify emerging patterns of usage

Google searches for “learning analytics” took off in 2010.
Possible indicator of relevance across sector & need for further investigation.
Scepticism

A known known
Apple to successfully sue Samsung

A known known
The bankers mess up the economy

An unknown unknown
xxx to unexpectedly yyy!
Zombie attack: Leicester city council overrun by ‘undead’

Note difficulties in:
- Identifying unknown unknowns
- Developing appropriate plans!

The zombies were filmed by Chris Porter as they walked through Leicester.

Just a week after Leicester's civic leaders admitted they were unprepared for a zombie invasion, a horde of the "undead" has shuffled through the city.

About 150 people in horror make-up took part in the "mass shamble", according to organiser James Dixon.

The mob "groaned and pressed themselves on the glass" at the council's offices.

It followed news last week that a "concerned citizen" had used a Freedom of Information request to ask how the authority would tackle a zombie attack.
Sense-making

Need to:

• Understand limitations of evidence-gathering techniques (including documenting ‘paradata’ so survey findings are reproducible & can be critiqued)
• Provide suggestions of implications of developments for the sector

In addition need to encourage feedback on:

• Evidence-gathering techniques
• Interpretation of findings
• Implications of developments

In order to inform:

• Further investigation
• Policy-making, planning and funding

Make sense of my talk in realtime: tweet if you agree, but especially if you don’t!
Significant Trends: Mobile

We now know of the importance of Mobile

Tecmark Digital Marketing Agency
Significant Trends: Mobile

Global mobile data traffic (Exabytes)

Data source: Cisco February 2011

0.24 0.60 1.20 2.20 3.80 6.30

2010 2011 2012 2013 2014 2015

Cisco
We now know of the importance of Mobile: but did we say the same when WAP came along?
Significant Trends: Social Media

There were “more than 150 million Tweets about the Olympics over the past 16 days”. [Twitter blog]
Survey in Aug 2012 of institutional use of Twitter across 24 Russell Group universities found >320K followers
Survey in Aug 2012 of institutional use of Facebook across the 24 Russell Group universities found >1M ‘Likes’ followers
Behind The Facebook Page

Trends in Fb ‘Likes’ for Russell group Unis since Jan 2011 show steady increase

But note increase in Jul 2012 due to addition of 4 new universities!

But might trends hide a more complex story:

- Usage & growth dominated by one significant player.
- More modest usage generally
Surveys carried out to monitor usage & trends for:

- Institutional use of social media
- Use of researcher profiling services (e.g. Google Scholar, Academia.edu, …) across institutions

Observations (and feedback):

- Differing results found if quotes used
- Possible inclusion of wrong Unis (e.g. Newcastle University, Australia)
- Personalised results depending on client environment

Need to provide paradata and encourage feedback on processes and interpretation of findings
Paradata Example

Dates of survey

Paradata: As described in a post on Paradata for Online Surveys it is important to document the tools and methodologies used when gathering evidence based on use of online tools in order that findings can be reproducible. In addition possible limitations in the tools or the way in which the tools are used should be documented.

This survey was carried out using the Blekko web-based service over the first two weeks in January 2012 and the findings rechecked on 25 January 2012 and changed recorded. Links are provided to the results provided by the service. However in order to view the findings you will need to be signed in to the service (the service is free to join).

The findings for the University of Birmingham had changed significantly over a period of three weeks. It is not clear whether the variation was due to changes in the University of Birmingham web site, an artefact of the multiple domain names and entry point URLs for the University of Birmingham home page (http://www.birmingham.ac.uk/, http://www.birmingham.ac.uk/index.aspx, http://www.bham.ac.uk/ and http://www.bham.ac.uk/index.aspx all resolve to the same page) or changes at Blekko (e.g. reindexing the web site).

Note that the form of the domain name given on the Russell Group University Web site has been used. This is normally based on the full name, with the exceptions of Cambridge (which uses "cam.ac.uk"), Edinburgh ("ed.ac.uk") and Glasgow ("gla.ac.uk").

The results for the host rank are based on an undocumented algorithm. The information on the size of the site is dependent on the number of pages which are harvested. Prefix was used as it was felt that this would be the form used by the majority of users.

Summary of unexpected findings

Limitations of survey methodology

People in host institution can provide contextual knowledge if open approaches used
Sense-Making: Social Media

Social media:

- Is about nodes and connections
- Numbers do matter for effective engagement and disseminations
- Experiences from other areas:
  - Nos. of mobile phones
  - Importance of email
  - “All bugs are shallow to many eyes”

Implications:

- Importance of best practices for popular & well-used channels
- Difficulties for new entrants e.g. Diaspora (open alternative to Facebook) and identi.ca and app.net (new open alternative to Twitter)
London 2012: is this the first open data Olympics?

Is London 2012 a haven for open data? Get our verdict

• Data journalism and data visualisations from the Guardian

How open has the Olympic data been? Illustration: Paul Scruton

Is this the first open data Olympics?

It should be - we have access to better data analysis and visualisation tools than ever before, many of them free. There is also a culture of open data around the world that just wasn't there in 2008. Governments have thrown open the doors to their data vaults and numbers are everywhere.

And what is open data? It is data published as a spreadsheet or a csv or some other machine-readable format which allows analysts to do something with it. It's what our Free our Data campaign called for.

Open data has won the big argument, arguably ever since the McKinsey report in May last year which pointed out that open data means money for those who can build apps and services off the back of it. And with it

Conclusions:

• “Not this time”
• “But it is the first data Olympics”
• “It's hard to see that by [Rio] 2016 this won't emerge as data we can all use”
Manchester City to open the archive on player data and statistics

The champions plan to make available the data on every player in every team from every game in the league last season.

Two years ago Vincent Kompany instigated a weekly review of Manchester City’s defensive performances. Photograph: Richard Sellers/Sportsphoto/Sportsphoto Ltd./Allstar

It was once a tiny room on the first floor of Manchester City’s Carrington training complex, not much bigger than a broom cupboard, where successive managers from Kevin Keegan to Stuart Pearce and Sven-Goran Eriksson would field questions at close range from the press.

Today, partition walls have been removed to house a team of full-time analysts who study every touch, turn and sprint made from the Premier League champions down to the club’s Under-9s. The world of data analysis has developed rapidly within football in recent years but not, City believe, beyond the guarded confines of its clubs. That is about to change.

On Friday, City will make available through its website the data on every player in every team from every game in the Premier League last season.
Use of Open Data in Libraries

Trends in reusing Library usage data, e.g. JISC’s Library Impact Data Project

Average number of **books borrowed** and **e-resource logins** for ~33,000 students in final year of studies

Image & data provided by Dave Pattern under a CC BY-NC-SA licence
Innovating or Improving?

How should we enhance the visibility of research papers?

• Search tools “better than Google”
• Richer metadata?
• Exploit potential of Linked Data?

Or

• Make more effective use of existing infrastructure?
Evidence of IR Usage

Evidence suggests:

- 50-80% of traffic arrives via Google
- Some traffic may not be recorded (direct links to PDFs)

SEO analysis of 24 Russell Group Universities

<table>
<thead>
<tr>
<th>No.</th>
<th>Domains</th>
<th>No. of links</th>
<th>Alexa Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Blogspot</td>
<td>176,625</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>WordPress</td>
<td>153,809</td>
<td>21</td>
</tr>
<tr>
<td>3</td>
<td>Wikipedia</td>
<td>7,230</td>
<td>8</td>
</tr>
<tr>
<td>4</td>
<td>BBC</td>
<td>2,811</td>
<td>36</td>
</tr>
<tr>
<td>5</td>
<td>Google</td>
<td>1,447</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>Ask</td>
<td>769</td>
<td>46</td>
</tr>
<tr>
<td>7</td>
<td>YouTube</td>
<td>460</td>
<td>3</td>
</tr>
<tr>
<td>8</td>
<td>Guardian</td>
<td>334</td>
<td>187</td>
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<tr>
<td>9</td>
<td>Reddit</td>
<td>261</td>
<td>143</td>
</tr>
<tr>
<td>10</td>
<td>Orange.fr</td>
<td>259</td>
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</tr>
<tr>
<td>11</td>
<td>Typepad</td>
<td>250</td>
<td>212</td>
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<td>CNN</td>
<td>135</td>
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</tr>
<tr>
<td>13</td>
<td>Microsoft</td>
<td>89</td>
<td>26</td>
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<td>14</td>
<td>Sourceforge</td>
<td>67</td>
<td>139</td>
</tr>
<tr>
<td>15</td>
<td>Ning</td>
<td>42</td>
<td>256</td>
</tr>
<tr>
<td>16</td>
<td>Oxford University</td>
<td>5</td>
<td>6,764</td>
</tr>
</tbody>
</table>

Importance of externally-hosted blog platforms!

Importance of blog platforms, Wikipedia & media
Implications

Implications of findings:
• Innovation is important
But:
• We shouldn’t ignore potential of implementing best practices on existing systems

Remember:
• Today’s mainstream service was yesterday’s innovation
• No guarantee that best practices for innovative systems will be implemented
JISC Observatory TechWatch reports on key areas of growth & importance:

- Data
- eBooks
- Mobile Web
- Augmented Reality

But what other early signals are we seeing?
London Metropolitan University to outsource most services to private firm

Contract valued at £74m includes handing over IT, library facilities, student counselling and careers advice.

Jeevan Vasagar
guardian.co.uk, Tuesday 14 August 2012 21.38 BST

London Metropolitan University will outsource all services except teaching and vice-chancellor's office. Photograph: Alamy

A London university has drawn up an ambitious outsourcing programme in which a swath of services, from managing its estates to marketing and finance, will be carried out by a private firm.

London Metropolitan University, which has more than 16,000 undergraduate students, has produced a tendering document under which all services except teaching and the vice-chancellor's office will be outsourced. The contract is valued at £74m over five years, according to the Exaro News website.
Follow-up comment (20 Aug 2012):
“VC should be applauded for the classic business move of getting the university to concentrate on its core activity.”

Carl Lygo is chief executive of the 'for profit' BPP Professional Education group and principal of BPP University College.
Challenge For Librarians

In time of uncertainties:

• Take an evidence-based approach to understanding the future
• Understand the changed environment
• Engage with opportunities in areas of growth and institutional importance
• Be open and encourage discussion on analysis & interpretation of findings
The role of libraries in data curation, access and preservation: an international perspective

Science and Technology Libraries

Congress track 1: Open access and digital resources.

14 August 2012 09:30 - 11:30 | Room: Session Room 1 | SI

- The role of libraries in curation and preservation of research data in Germany: findings of a survey
  Translations: [Français]
  ACHIM OSSWALD (Cologne University of Applied Sciences, Institute of Information Science, Cologne, Germany) and STEFAN STRATHMANN (Competence Center on Digital Preservation and Research Data, Goettingen State and University Library, Goettingen, Germany)

- Academic librarians and data research services: preparation and attitudes
  CAROL TENOPIR (University of Tennessee, Knoxville, TN, USA), ROBERT J. SANDUSKY (University Library, University of Illinois at Chicago, Chicago, IL USA), SUZIE ALLARD (University of Tennessee, Knoxville, TN, USA) and BEN BIRCH (Graduate Research Assistant, University of Tennessee, Knoxville, TN, USA)

- National Research Data Initiatives in Canada
  LYNN COPELAND (Simon Fraser University Burnaby, British Columbia, Canada) and BRENTO ROE (Canadian Association of Research Libraries Ottawa, Ontario, Canada)

- Leading from the library: data management initiatives at the University of Northampton
  MIGGIE PICKTON (The University of Northampton, Northampton, England, United Kingdom) SARAH JONES (Digital Curation Centre at HATII, University of Glasgow, Scotland, United Kingdom) and MARIEKE GUY (Digital Curation Centre at UKOLN, University of Bath, England, United Kingdom)

- Libraries as service-brokers for digital data curation: Practical insights from the DFG project DP4lib (Digital Preservation for libraries)
  REINHARD ALTENHÖNER (Deutsche Nationalbibliothek, Frankfurt am Main, Germany)

- The role of libraries in supporting data exchange
  SUSAN REILLY (LIBER (Ligue des Bibliothèques Européennes de Recherche/Association of European Research Libraries), The Hague, Netherlands)
Exploiting Opportunities: Data

Leading from the library

• Dedicated Research Support post in library since 2007, now a team of two
• ‘Open Research’ at Northampton:
  – NECTAR, the institutional repository
  – Northampton Open Journals
  – Research Data Policy
• ... ALL initiated by library staff and delivered in consultation with the research community

Opportunities for Librarians in engaging with research data management – see IFLA paper
Warning From The Past

Tim Berners-Lee didn’t accept the evidence of the popularity of Gopher!
Serenity prayer:

God, grant me the serenity to accept the things I cannot change,
Courage to change the things I can,
And wisdom to know the difference.
The Data will be Big, but our users will continue to use Facebook and Twitter.

But research data will grow in importance as will use of mobiles.

According to the evidence the future isn't quite what I expected. But it has helped to identify our business strategies.

Posted by Brian Kelly (UK Web Focus)

Tomorrow I’ll be giving an invited talk on “What Next for Libraries? Making Sense of the Future” at the Emerging Technologies in Academic Libraries 2012 Conference (emtacl2) which is being held at the Norwegian University of Science and Technology University Library in Trondheim, Norway.

The slides for the talk are available on Slideshare and are embedded below. In addition an accompanying paper is available on Opus, the University of Bath repository, in MS Word and PDF formats.


Reflections on the past & thoughts on the future

Talk by Brian Kelly, UKOLN at the EMTACL 2012 conference