STM Industry in 2015

Michael A Mabe
CEO, STM
What is STM?

• Global representative of scholarly publishing community

• Diverse membership of organisations
  – Not-for-profit, societies, university presses and commercial companies
  – New starts and long standing players

• Members responsible for over two-thirds of all annual article output and over half of active peer-reviewed titles
2015 is 350th Birthday of the Journal

Henry Oldenburg: inventor

First Issue 5 March 1665
STM Market Characteristics

• Annual STM English language journal revenues about **US$10 billion** in 2013
  – CAGR 4.5% (2008 US$8 billion)

• Broader STM market (including books and datasets) about **US$25.2 billion** in 2013
  – STM Books worth ~US$5 billion; e books 17% and growing fast

• By geography
  – 55% US; 28% EMEA; 14% APAC; 4% RoW

• By employment: 110,000 globally
  – 20-30,000 in Europe
STM Journal Market

• 28,100 active scholarly peer reviewed journals exist late 2014
  – Growing at about 3.5%pa
• 2.5 m articles published per year
  – Growing at 3-4%pa
• USA dominates paper output still (23%) but China now in second place (17%)
  – US leads citations (36%), China 11th (6%)
• UK (7%), Germany (6%), Japan (6%) and France (4%)
Journal Growth 1665-2014

Journal growth
[Original Source: M A Mabe The number and growth of journals Serials 16(2).191-7, 2003]

Total number of active refereed learned journals in 2014: 28,100

Data from Ulrich’s International Periodicals Directory
Article Growth 1981-2006

$y = 475491e^{0.0266x}$

$R^2 = 0.9836$

~3% p.a.

ISI Data
Relationship of Journals & Researchers

R&D Workers, Journals and Articles

More researchers $\Rightarrow$ more journals
World Share of Articles

Number of articles per year (’000)

Source: Scopus; projections based on trend information
Global Article Authorship

1999-2003
5.49M

2004-2008
7.33M

Key
- United States
- Japan
- United Kingdom
- Germany
- France
- China
- Italy
- Canada
- Russian Federation
- India
- Spain
- Other

Knowledge, networks, nations: Global scientific collaboration in the 21st century.
RS policy document, March 2011 – data from Scopus
R&D Spend and Published Papers

Source: Elsevier analysis, Scopus
Researchers

• Researcher core motivations for publishing unchanged

• Reading patterns are changing
  – Reading more (270 articles pa)
  – Reading times down (just over 30 min)
  – Search dominates over browse (discipline variation)
  – Very little time spent on publisher web sites

• Peer review viewed as fundamental
  – Much experimentation but little support for post publication review
Average Articles Read per University Faculty Member per year

<table>
<thead>
<tr>
<th>Year</th>
<th>Average Articles Read</th>
</tr>
</thead>
<tbody>
<tr>
<td>1977</td>
<td>150</td>
</tr>
<tr>
<td>1984</td>
<td>172</td>
</tr>
<tr>
<td>93-98</td>
<td>188</td>
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<tr>
<td>00-03</td>
<td>216</td>
</tr>
<tr>
<td>04-06*</td>
<td>271</td>
</tr>
</tbody>
</table>

*311 with outliers

Source: Carol Tenopir
Average Articles Read per University Faculty Member per year

- **Med**: 420
- **Science**: 348
- **Eng**: 288
- **Soc Sci**: 240
- **Hum**: 156

Source: Carol Tenopir
More Subject Differences

- **Pediatricians**
  - Browsing: 76%
  - Online Searching: 3%
  - Cited in Other Pub.: 5%
  - Another Person: 3%
  - Other: 8%

- **Astronomers**
  - Browsing: 21%
  - Online Searching: 21%
  - Cited in Other Pub.: 16%
  - Another Person: 3%
  - Other: 39%

*Source: Carol Tenopir*
Faculty Use Many Ways to Locate Articles

Source: Carol Tenopir
Sources of Readings of Articles

Source: Carol Tenopir
Technology

- Virtually all STM journals are online
- Social networks have yet to make the same impact in STM space as consumer media
- Except for healthcare professionals, mobile devices have yet to significantly change how researchers interact with content
  - Less than 10% of STM platform traffic from mobiles
- Data, data, data!
  - Policies for deposit and sharing (RDA)
  - Data citation (DataCite)
  - Data journals
- TDM
  - CrossRef TDM tools, CCC and Infotrieve services
Business Models

• Aggregation the norm; licensing still dominant
  – Supply side: the Big Deal
  – Demand side: Consortia

• Access to STM content at an historic high
  – Annual fta downloads greater than 2.5 billion

• National site licences and public library access

• Research4Life provides free or very low cost access for 7,700 institutions in 109 developing nations to nearly 20,000 journals
Open Access

• Degree of penetration of various OA models is complex (not least because OA models are not all well defined)

• DOAJ lists 10,090 (7,245 in English) OA journals

• Overall OA article penetration about 27-29% not the EC study 50%!
  – 12% (Gold or articles in OA journals)
  – 5% (Delayed access on publisher websites
  – 10-12% (self-archived copies)
OA Variability by subject

Source: Björk et al. 2010
Trends Since 2012 Report

• Web is now dominant
• Social networks yet to take off
  – Those that do exist are used mainly for reference or article sharing rather than social interaction
• Smart phone adoption – limited impact
  – except tablets with healthcare professionals (curiously appropriate one feels!)
• Access levels are high and continue to grow
  – 2.5+ billion downloads at very low cost ($1 per paper)
• Big deal licensing remains majority model
  – Some criticisms but likely to evolve rather than die out
  – Still business model for 70+% of articles
Trends Since 2012 Report

• Globalisation continues apace
  – China moving to lead in article output
  – India and Brazil expanding research base

• In 2012 clear policy shift to Gold OA identified but in 2015 more Green tinted
  – Virtually all funders will pay for Gold APC but policies lean heavily to Green
  – Green = “nobody pays” model attractive for policy makers
  – Publisher unpopularity and lack of trust a major issue here
Future Prospects?

• Some constants in fast changing world
  – Oldenburgian functions remain fixed (registration, dissemination, certification and archive)
  – Author motivations remarkably constant
  – BUT mega journals seem to run counter to this

• Growth in volume and complexity

• Increased focus on data

• Open access transition will continue
  – Momentum for uptake remains but may stall at a mixed market position
  – Will apc rates rise or fall or stratify?
  – Top (high rejection rate) journals remain subscription-based?
  – Embargo periods remain of much debate but not change much?
  – OA in books and educational resources

• Accelerating pace of market and technology innovation
  – Set in part by leading consumer brands
Dangers of Prediction

• Alexander Graham Bell demonstrates the telephone in London in 1878

The telephone is little better than a toy, it amazes ignorant people for a moment, but it is inferior to the well-established system of airtubes.
—Saturday Review 1878

The Americans have need of the telephone, but we do not. We have plenty of messenger boys.
—Sir William Preece, Chief Engineer, British Post Office (1878)