Author Deposit Mandates for Scholarly Journals: A View of the Economics

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Author Deposit Mandates: Why the Fuss?

NIH Public Access Mandate in the news:

- NIH: highly visible as world's largest science funding agency.
- After many years (> 5) of unproductive negotiations between NIH and publishers, an author deposit mandate became law in April 2008.
- All NIH grantees must post their peer-reviewed manuscripts on the NIH public website (PubMed Central) within 12 months of publication.

For NRC's BRDI (and public policy analysts') consideration:

- Is the NIH mandate good public policy for dissemination of scientific information?
- The mandate obviously enhances public access, but is it truly providing meaningful access to the lay public? How will it affect science (peer review), scientific journals, and scientific societies?
- Should such mandates be extended to other agencies?

Data vs. Publications

- Study's author and (often) his/her funding agency own data.
- Research data from publicly-funded research should be widely available, protected, and archived (classified and proprietary research excepted).
- The creative expression of the author is copyrighted and transferred to publishers in the author/publisher agreement. The author exchanges that copyright value with the publisher for brand, quality, etc.
- Copyright provides the incentive for the publisher to invest in the added value.

Open Access (OA) Publications—Some Definitions

Preprint Distribution:

- common practice since the invention of the postal system
- greatly expanded by web services and subject matter repositories (arXiv)

"Green" OA:

- author deposit of manuscript onto personal and/or institutional websites
- use of final peer-reviewed manuscript allowed by some publishers

"Gold" OA:

- author (or sponsor) pays for public access

STM Journal Publishers' Perspective on OA

Some Facts:

- The advancement of science is facilitated by well-established business of scholarly journal publishing.
- STM journal publishing in the U.S.= $3B business (2007), employs 36,000 people.
- OA business models can obviously increase access to publications.
- Prevalent perception that "e" means "free."

Concern:

- Few sustainable OA business models have been demonstrated (some high profile cases, e.g., *PLOS*, *New Journal of Physics*).

STM Journal Publishers' Perspective on OA (cont.)

- OA represents a substantial shift from the current and dominant subscription-based model.
  - With transition to online distribution (ca. 1998) and institution-wide subscriptions, access to journal content has widely increased.
  - Industry-wide cost-per-download has been reduced to <$2 (for >1B downloads in 2007).
- Prevalent OA model is typically a fully author-pays model (~ $1.5k - $4.0k/article).
  - Most STM publishers offer OA options; however, poor take-up by authors (< 1%).
  - Most STM publishers are experimenting with OA models; ~5% of the 23,000 STM journals have some form of OA

Publishers' Concern: Mandated Article Deposits

- Mandated and/or unplanned shifts to OA will negatively affect scholarly journal publishing and its essential role in science:
  - Implications for the certification of science (journals manage peer-review).
  - Implications on necessary investments: sophisticated journal web platforms, fully maintained backfile archives, and technology-intensive multi-publisher services (CrossRef, CrossCheck, universal DOIs).

It's the Economy, …!

- Publishers and librarians are traditional partners in scholarly publishing business.
- Rhetoric (on both sides) and lack of analysis have strained the partnership.
- The "serials crisis" is real, more so in a recession environment: growing number of journals (~3% annually), rising cost per journal (outpacing inflation and page growth), and flat or decreasing library budgets.
- OA journals could possibly solve the problem for libraries. But, do they? Can the new model be universally applied?

It's the Economy, …!

Let's examine:

- The demonstrated need for improved access to journals;
- Current economics and projections for changing journal business models; and
- Unintended consequences of unfunded mandates.

Are Scholarly Journals Following Newspapers over the Cliff?

James Surowiecki (*The New Yorker*, Dec. 22, 2008) on the rapid demise of the newspapers:

•Many commentators pin the problem on differences between print and online ads and the difficulty of attracting new readers due to increased competition (new media).

•Surowiecki pins the problem on "us," i.e., "the consumer:"

> *"The real problem for newspapers, in other words, isn't the Internet; it's us. We want access to everything, we want it now, and we want it for free. That's a consumer's dream, but eventually it's going to collide with reality: if newspapers' profits vanish, so will their product."*

Are Scholarly Journals Following Newspapers over the Cliff? (cont.)

- Phil Davis writing in the *Scholarly Kitchen* (SSP, Jan. 6, 2009) sees the same downhill slope for journals if the journal community doesn't learn from this example:

  "We have a generation of students growing up in an online environment not understanding what a subscription is, and a new cohort of faculty and researchers believing that the articles they access are free. From their perspective, they are free, and in good financial times, libraries can keep this misperception alive. In bad financial times, the perception is a liability to publishers and their products."

- Surowiecki warns, "Soon enough, we're going to start getting what we pay for, and we may find out just how little that is."

Scholarly Journals—Value Proposition

Phil Davis (SSP) notes that, when you remove the production activities from scholarly journals (manuscript management, copyediting, layout, finance), four essential functions remain:

Function	Purpose
Registration	Establish science priority claims
Validation	Certify the best science (via peer review)
Distribution	Provide access
Archiving	Maintain science record

- In the print era, the four functions were bundled.
- On-line publishing and repositories (institutional repositories , digital archives, or subject-based repositories, such as PubMed Central and arXiv) ***partially*** deliver functions 1, 3, and 4.
- **Validation (via Peer Review),** however, remains the key function delivered by scholarly journals. It's necessarily ***independent*** of the funding agencies and the users (universities and research institutions).

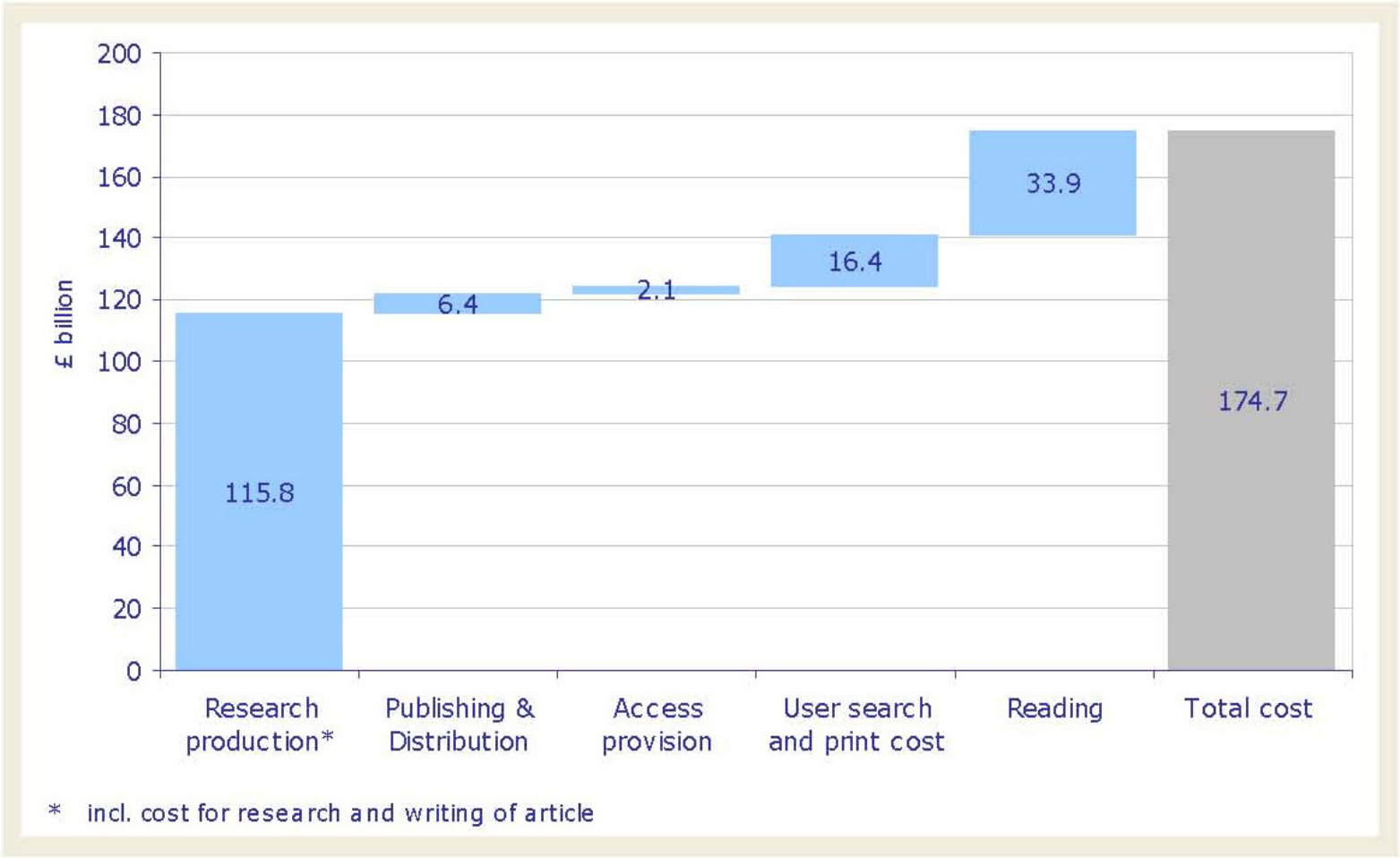
Scholarly Publication Costs

UK Research Information Network (RIN) recently (2008) completed a study of the global costs of research and publications*:

- global research enterprise=£175 B in 2007
- publication and distribution costs= £6.4 B
  - £4.5 B after subtraction of author (non-cash) contributions for peer review (~ STM revenue estimates)
- Who pays for these costs? Predominately, institutional subscriptions.

**www.rin.ac.uk/costs-funding-flows*

Figure 2: Global, annual cost incurred in the research production and communication process

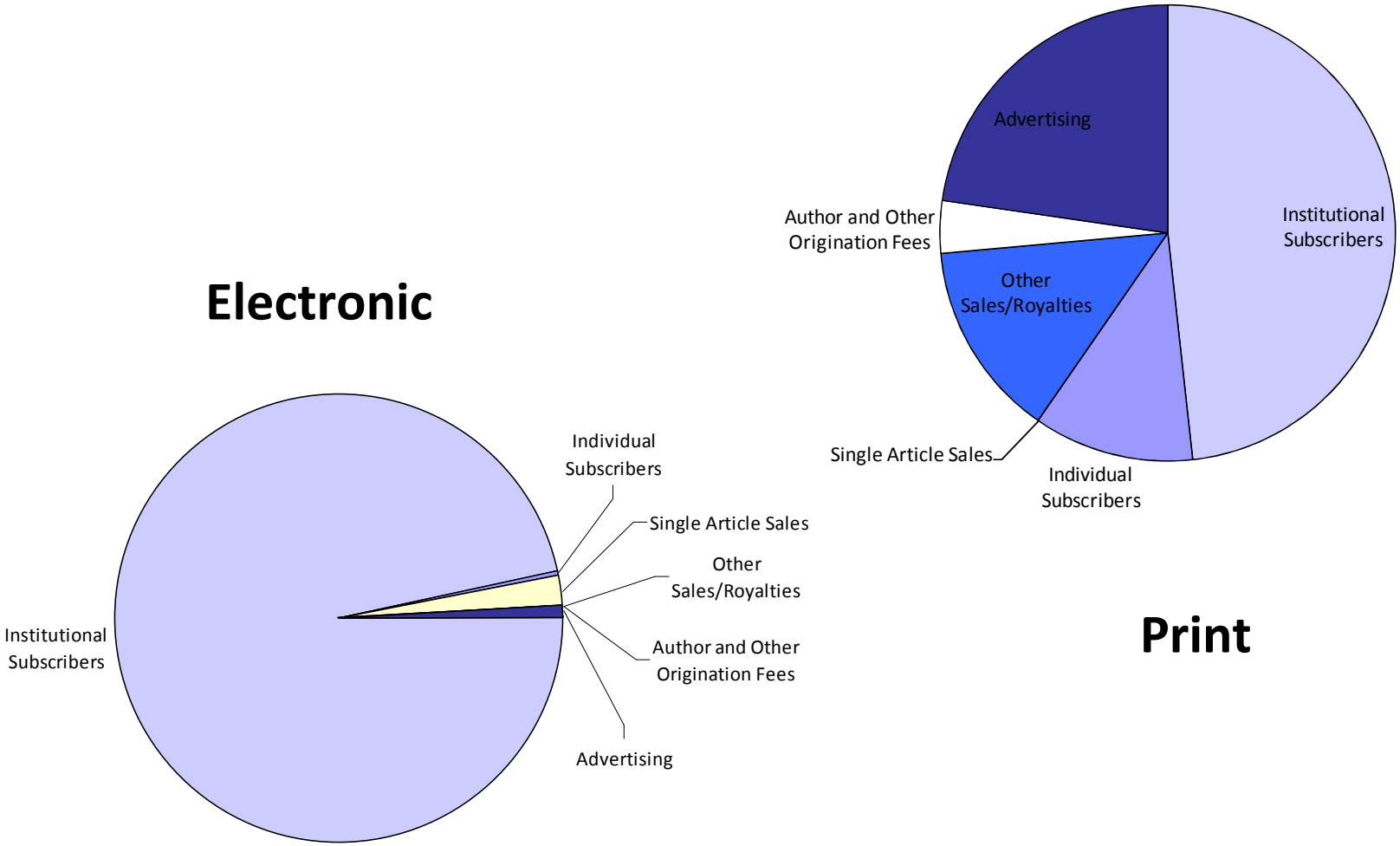


www.rin.ac.uk/costs-funding-flows

Journal Economics—AAP Survey (2005-2007)

- Scope:
  - STM publishers (19) submitted revenue data for 2005-2007.
  - Data covers approximately 45% of the research and review article output for 2007, based on estimates from Thomson Reuters (Web of Science) and Elsevier (Scopus).
- Findings:
  - 4,094 journals published, of which 460 were OA in some form (11%).
  - 593,926 articles published, of which 14,675 were OA (2.5%)
  - Nearly all journals, distributed electronically, trend online distribution, only.
  - With move to online distribution, the revenue has shifted from diversified sources (in print era) to institutional subscriptions (>90%).

Source of Revenue



AAP Survey (2009)

Costs/Risks of Switching Business Models

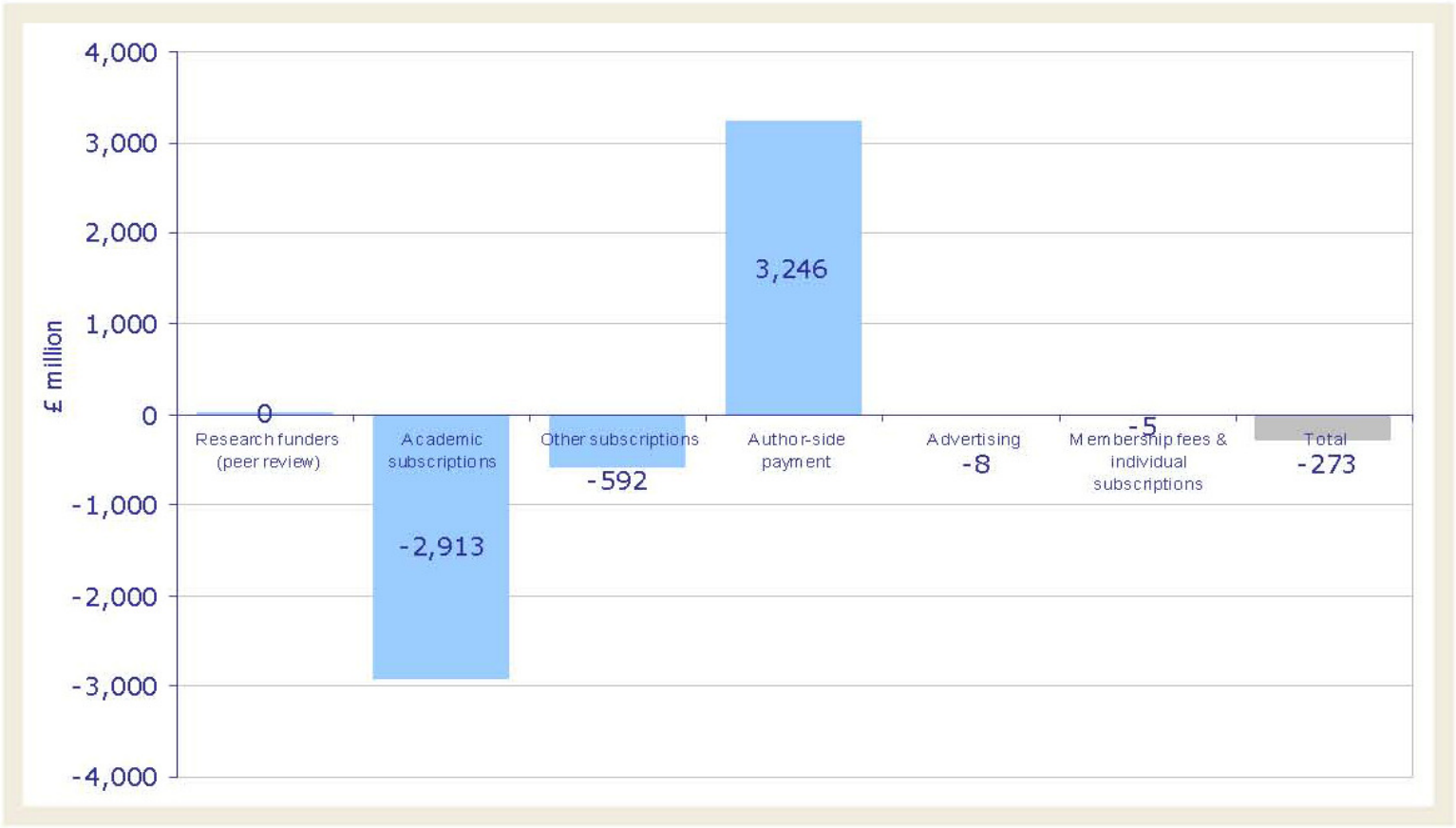
OA proponents, some librarians, and institutions have advocated a wholesale switch from the predominant subscription model to the “Gold” OA (author pays) model.

- Several estimates show this transition is approximately cost neutral (UK-RIN, Cornell, Duke), HOWEVER,
  - Transition costs are not included.
  - Can publishers extract author fees from millions of authors as efficiently as from thousands of institutions?

Costs/Risks of Switching Business Models (cont.)

- The burden of author fees would predominantly fall on research-intensive institutions.
- Many authors from lower-tier institutions cannot or will not pay.
  - Such authors are subsidized by “tiered” subscriptions.
- Access for authors from 114 underdeveloped countries is free or low-cost (subsidized by STM publishers “Research for Life” consortia).

Figure 13: Additional differences in global publication & distribution funding between e-only publication (Scenario 1) and Scenario 2



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Quantifying Unintentional Consequences of a Transition to OA

- What happens to libraries and librarians when the $4-5B of journal-subscription line disappears from their budgets?
- What happens when high-impact journals (with low acceptance rate) are forced to charge exorbitant authors fees? (*Science* @$10k/author?)
- What happens to the validation of science and the certification of scientific practitioners (e.g., tenure) if the current journal-managed peer review process cannot be sustained?
- What happens to the public outreach and lay-language translations of science for the public performed by scientific societies whose income is dependent on journals?

Is Journal Access a Problem in the Research Community?

No! according to a recent survey* of journal authors: Authors give "journal access" number 12 on a list of concerns.

So, what matters most to authors?

1. **Quality:** Availability of high quality (peer reviewed), highly cited journals.
2. **Preservation:** Archiving and access to the published version of record (publishers sites, repositories, Portico, etc).
3. **Efficiency:** Fast, accurate and filtered online searches (enhanced by joint publisher initiatives which have linked bibliographic data for >600 publishers, i.e., CrossRef).

** Intern. STM Assoc. Survey, 2008 (P. Evans, Elsevier)*

Recommendations for Public Access to Research Results

Return the NIH Public Access Policy to voluntary compliance and encourage genuine engagement between NIH and the STM publishers.

NIH **should not** dictate journal business models or engage in duplicating activities that are carried out efficiently by the private sector (competing with journal websites, establishing independent bibliographic tags, etc.).

The policy for NSF grantees (Public Law under the America COMPETES Act, August 2007) is a useful model for other science agencies:

- Grantee research reports posted on NSF public website.
- Summary paragraph submitted in lay language.
- Links provided to associated journal publications.