



Ivy Anderson
California Digital Library

Getting To Open: Challenges, Drivers And Opportunities For Transforming The Global Publication System

- National Academies OF Science, Engineering and Medicine Symposium

- Toward an Open Science Enterprise
- September 18, 2017





CDL and the University of California

The Libraries

10 campuses, 100 libraries
2 Regional Storage Facilities
Annual combined materials
expenditures: \$94M

California Digital Library

"11th University Library" - founded 1997

Operates systemwide digital library services
for UC and beyond

- eScholarship open access publishing + repository services
- DMPTool
- Data management and sharing services
- Content licensing & open access support



The University

10 Campuses
5 Medical centers
3 National Laboratories

250,000 students
21,000 faculty
44,000 other academic

Annual research expenditures:
\$4.5 bn

Annual publication output:
~40,000 research articles

● Davis

● Berkeley

● Santa Cruz

● Merced

● Santa Barbara

● Los Angeles

Irvine ●

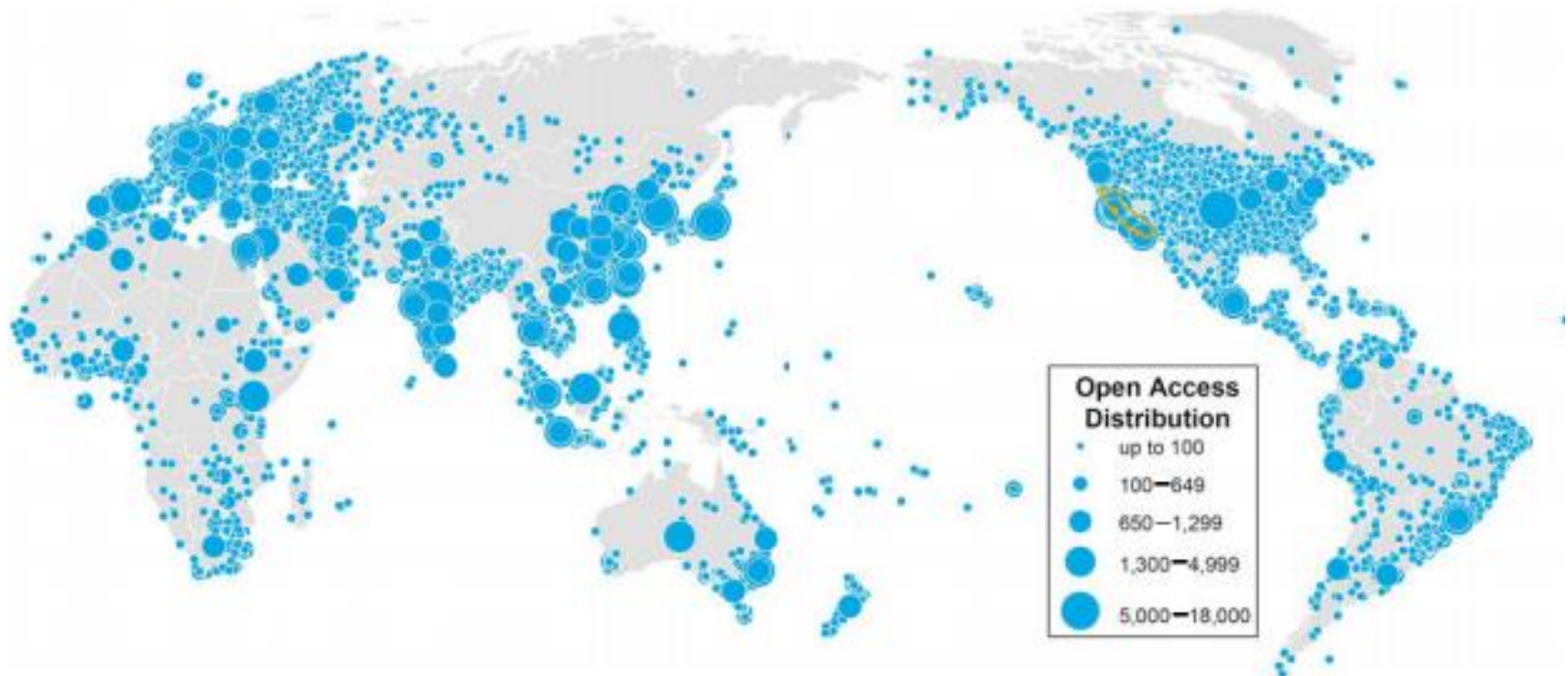
● Riverside

● San Diego

Green OA policies have increased access to scholarship across the globe

UC's Open Access policies have resulted in a growing body of freely available research in the eScholarship online repository, expanding the global reach of UC's research enterprise

Geographic distribution of nearly one million downloads of 45,000 articles deposited since 2012 under the University of California's open access policy

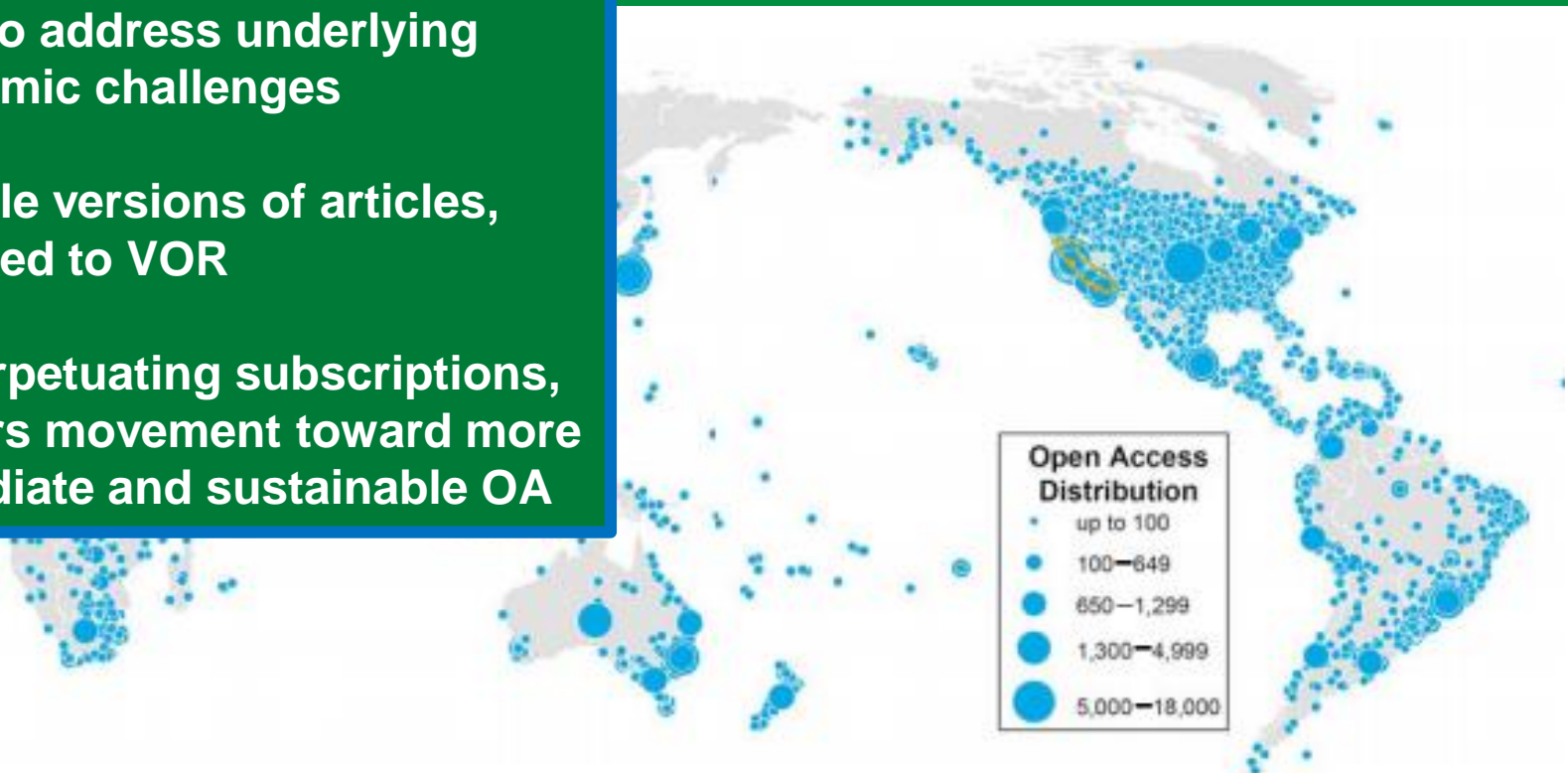


But green OA has weaknesses as well

- Low author uptake
- High overhead for authors and institutions
- Fails to address underlying economic challenges
- Multiple versions of articles, unlinked to VOR
- By perpetuating subscriptions, hinders movement toward more immediate and sustainable OA

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million downloads of 45,000 articles deposited
California's open access policy



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“The future is with immediate publication and postpublication peer review, and the sooner we get there the better”



Michael
Eisen

<http://www.sciencemag.org/news/2017/02/gates-foundation-strikes-deal-allow-its-researchers-publish-science-journals>

articles deposited

How do we take those next steps?

Increasing disconnect between North American and European approaches to open access

North America

- **Funding Agency OA Policies**
 - **White House OSTP Directive**
 - **FASTR**
 - **University Faculty OA Policies**
- 

Europe / UK

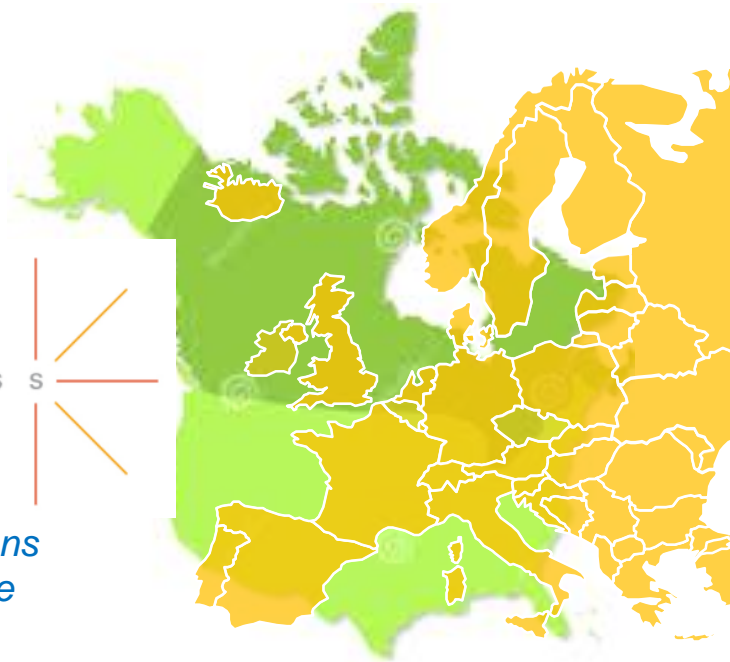
- **Finch Report**
 - **Horizon 20/20**
 - **Netherlands Call to Action on Open Access**
 - **OA2020**
 - **APC Offset Agreements**
- 

How do we take those next steps?

More than 80% of the total article output of the Max Planck Society is published in journals from 20 key publishers

o p e n a c c e s s
2 0 2 0

87 scholarly organizations have officially signed the Expression of Interest.



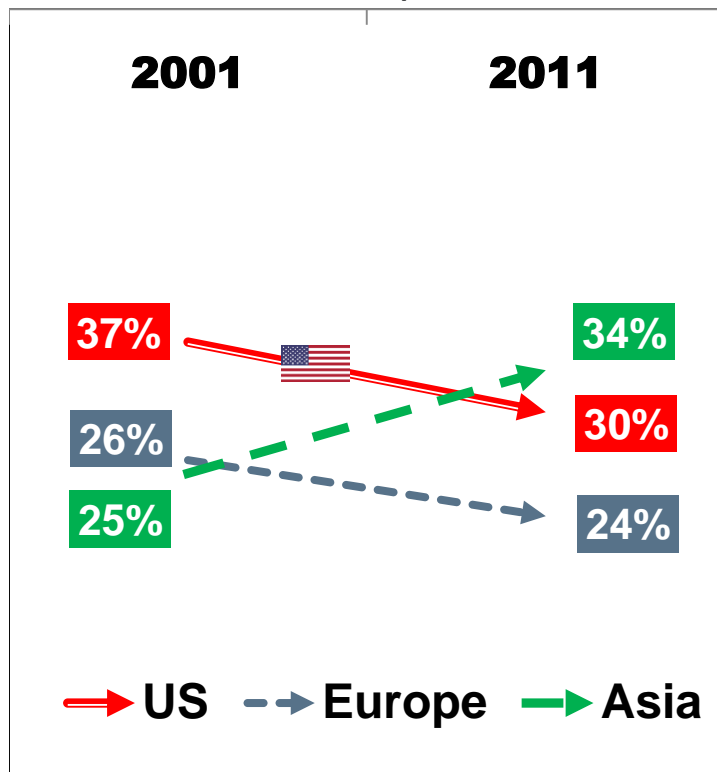
A move to full "gold" open-access publishing will "cripple university systems" by incurring large extra costs without significantly improving access to research, leading research universities have warned.

<https://www.timeshighereducation.com/news/finchs-open-access-cure-may-be-worse-than-the-disease/420392.article?storycode=420392>
June 28, 2012

The US shoulders a disproportionate share of the cost of the global STM system relative to its share of published research

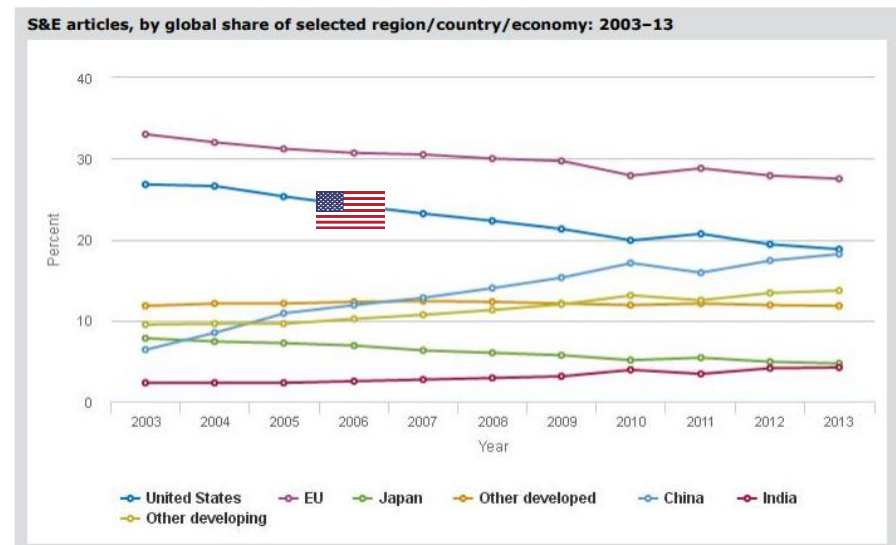
Global R&D Share

2015 STM Report



S&E Global Article Share

NSF 2014



“The cumulative effect of sustained above-global-average growth in R&D spending in emerging economies has been a profound shift in the global make-up of research.”

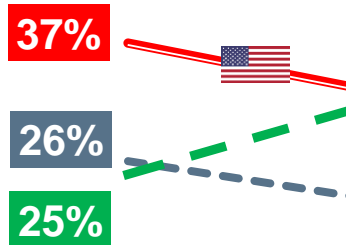
(STM Report, 2015)

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Global R&D Share

2015 STM Report

2001

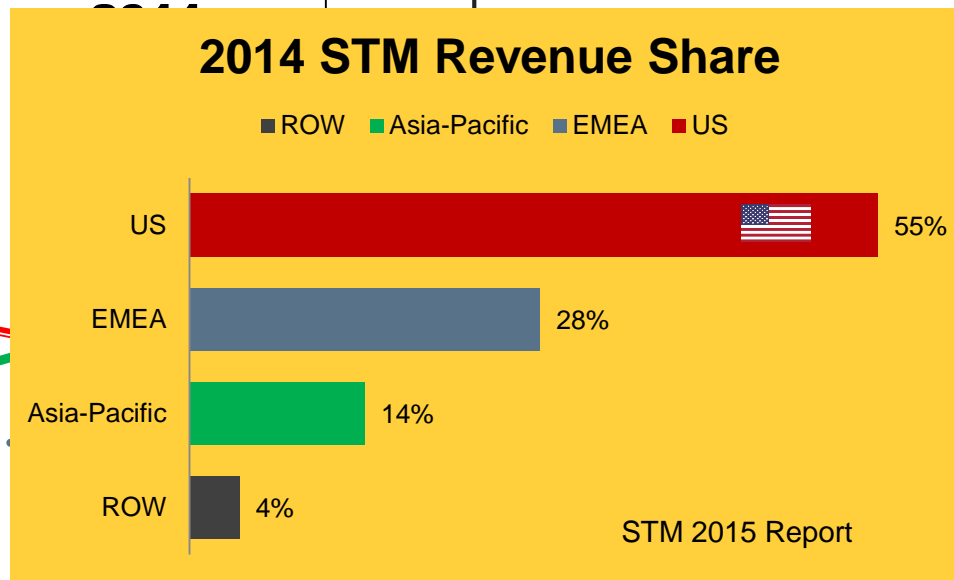


→ US - - → Europe → Asia

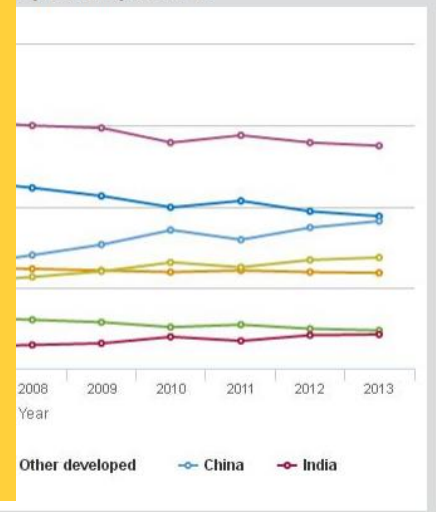
S&E Global Article Share

NSF 2014

2014 STM Revenue Share



try/economy: 2003-13



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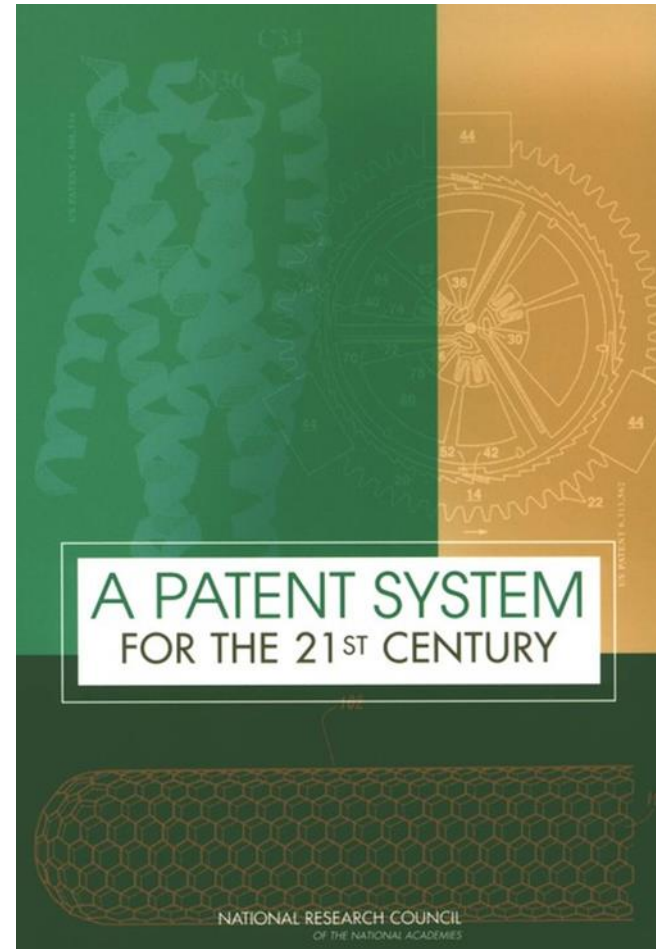
(STM Report, 2015)

Patent Analogy: First to Invent vs. First to File

In 2011, the U.S. adopted the First to File patent system used in other countries to address growing problems of patent quality, rising transaction costs, and impediments to knowledge dissemination arising from international inconsistencies.

“...[by aligning] the U.S. with the rest of the world ... the America Invents Act distinctly improves U.S. patent law for small businesses ... bringing more certainty, simplicity and economy to the patent process”

The America Invents Act is Better for Small Business
SEPTEMBER 21, 2011 BY JOHN KOENIG
<http://johnkoenig.com/author/john-koenig/>



What about authors?

“As subscription prices climb,
...[w]e need an affordable
alternative that preserves both
quality and prestige.

The university should negotiate
with publishers on our behalf so
that we can retain our copyrights
and share our work, but any
open access or other solutions
should be no more inconvenient
to us than the forms we now
sign that surrender our rights.”

David Crohn, Department of Environmental
Science, UC Riverside



“the failure of Green and Gold is
down to a preference for
stakeholders not to change
compounded by the scale of the
change needed.”

“...even when everybody has
accepted that change is
unavoidable, change is like
death and taxes – it should be
postponed as long as possible,
and no change would be vastly
preferable (Drucker, 1999).”

- Toby Green, OECD



SCOAP³ – Sponsoring Consortium for Open Access Publishing in Particle Physics

What is SCOAP³

SCOAP³ Partners

SCOAP³ Journals

SCOAP³ Repository

SCOAP³ is a global partnership of 3,000 libraries, funding agencies and research institutions from 47 countries and Intergovernmental Organizations.

SCOAP³ has converted the high energy physics (HEP) literature from major publishers to open access by redirecting library subscription revenue toward per-article costs. With APS joining in 2018, SCOAP³ will have converted 87% of the HEP literature to open access.



Access the
Repository

Articles funded by SCOAP³:

0

yesterday

341

last 30 days

2 964

in 2017

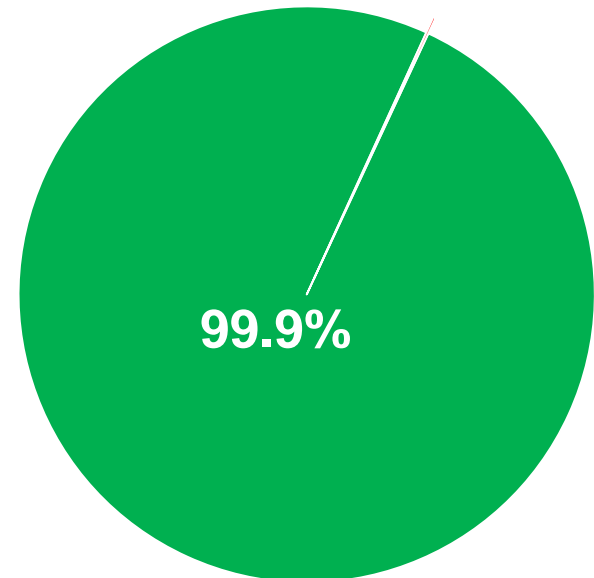
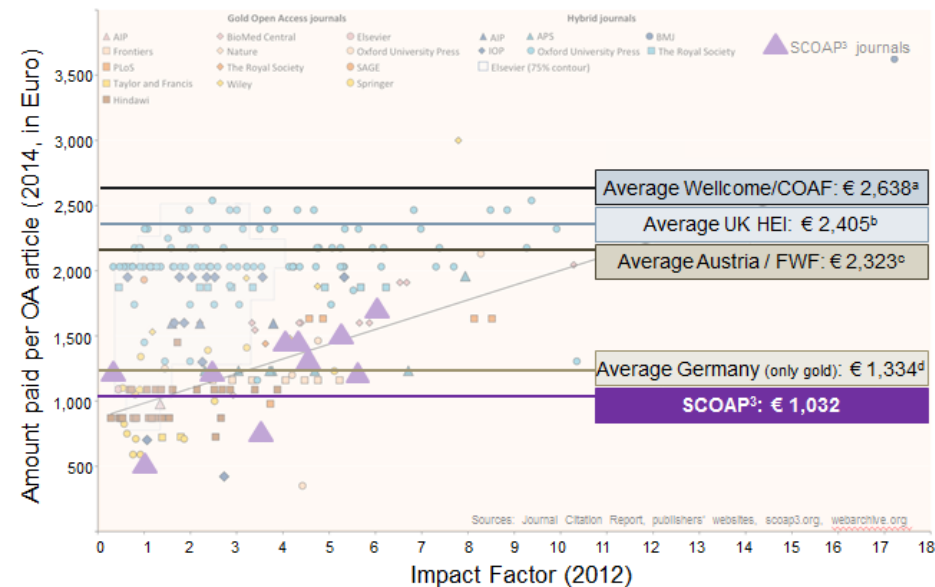
16 631

since 2014

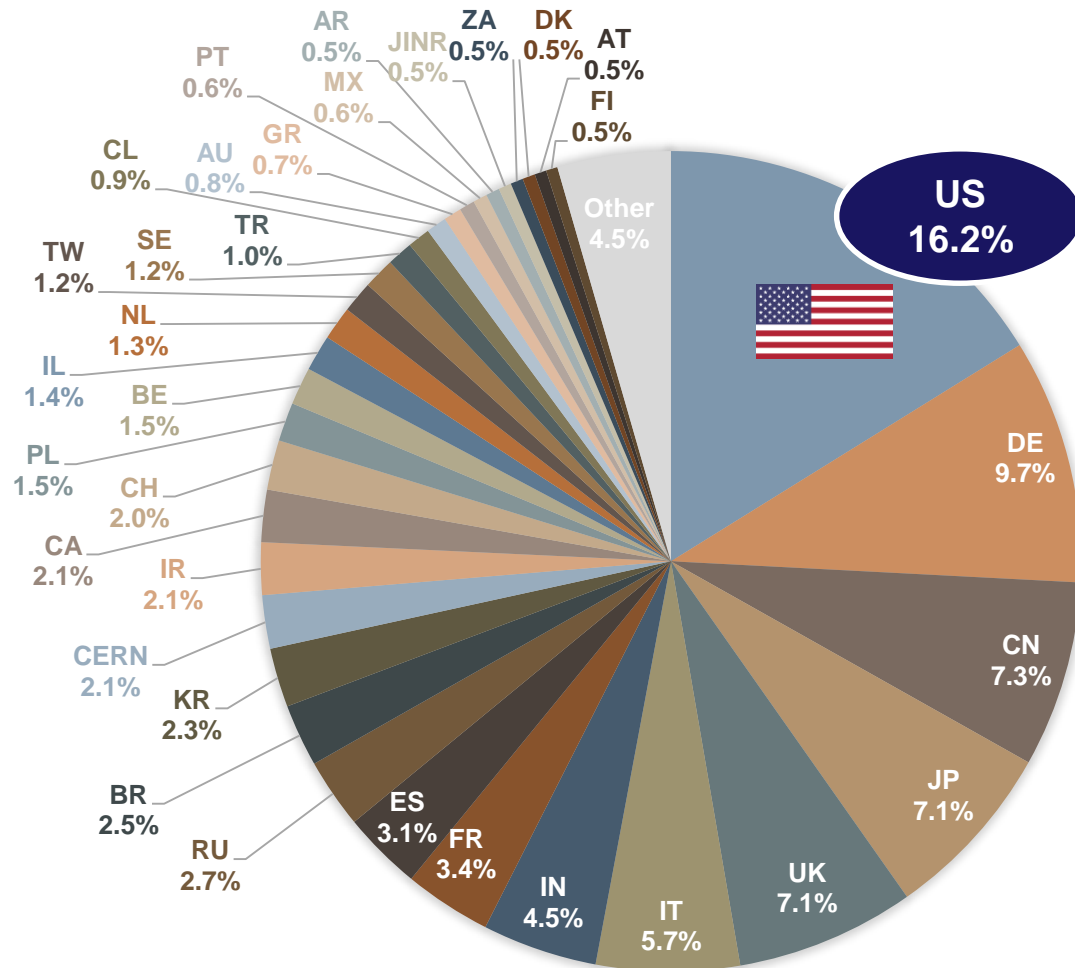
SCOAP³ offers a real-world example of how global collaboration among libraries, publishers, and research funders can be deployed to achieve open access aims

Low Average Cost Per Article:
€ 1,022

High Publisher Compliance
(correct license, timeliness, repository deposit)



...with country costs scaled to match global output



*Country participation fees
based on HEP article
publication share*

Share of HEP publications 2014-2015 (as used for SCOAP³ Phase 2)

California Digital Library

Pay It Forward

Investigating a Sustainable Model of Open Access Article Processing Charges for Large North American Research Institutions

Led by the University of California, Davis and the California Digital Library

funded by the Andrew W. Mellon Foundation

January 2015 – June 2016

University of California, Davis

UC's Pay It Forward study sought to study the impact of a largescale conversion of the literature via APCs on large North American research institutions

http://icis.ucdavis.edu/?page_id=713

These institutions would assume the bulk of the financial burden in an APC-driven OA model

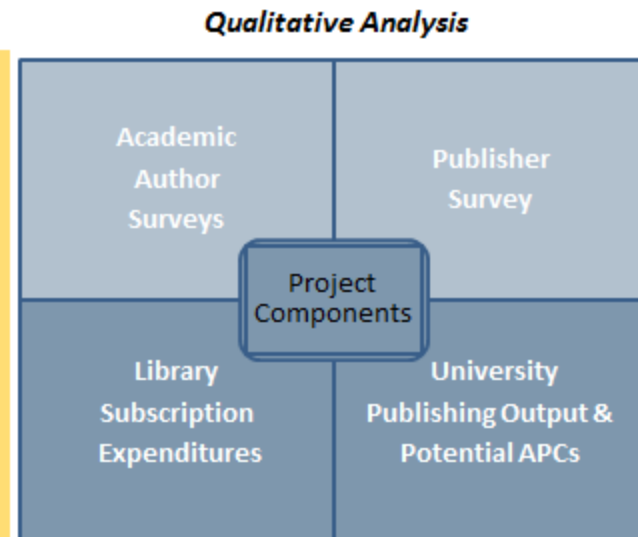
University Partners:

University of California

Harvard University

Ohio State University

University of British Columbia



Industry Partners:

Association of Learned & Professional Society Publishers (ALPSP)

Thomson Reuters (Web of Science)

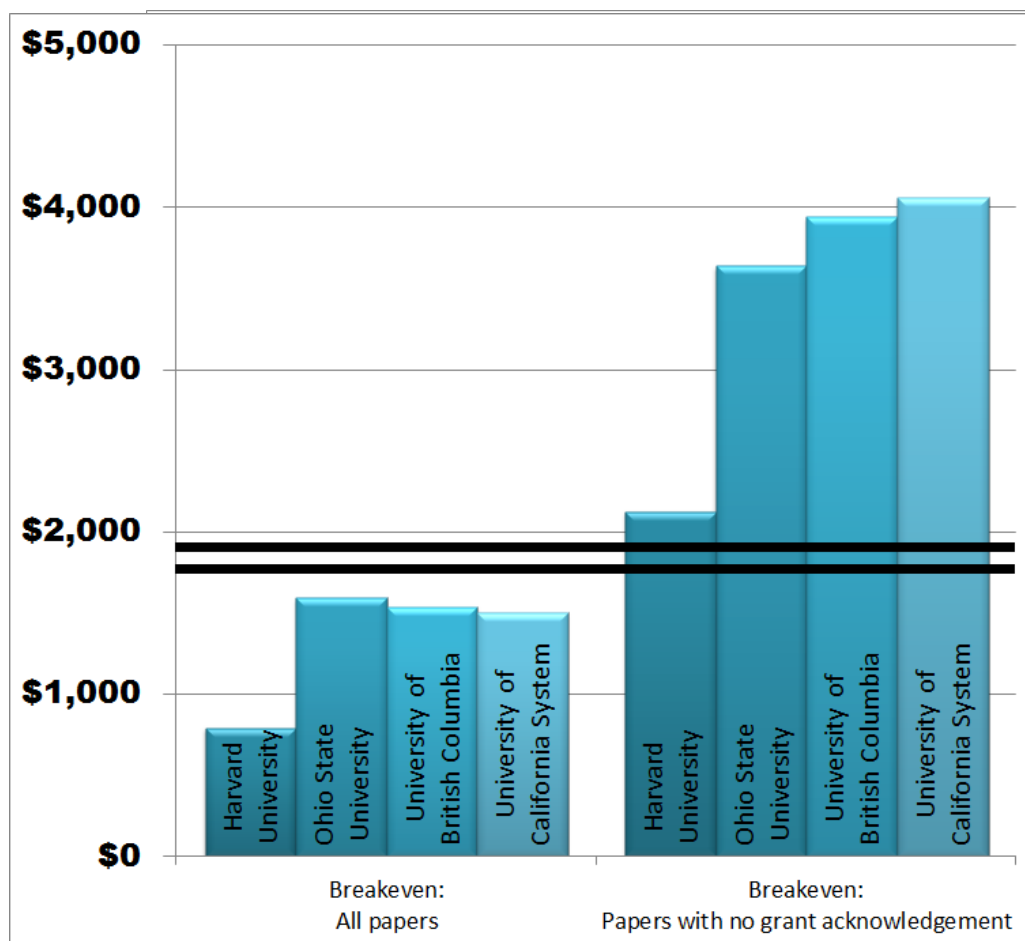
Elsevier (Scopus)

Quantitative Analysis: Five-Year Period, 2009-2013



Findings: Affordability

Our study looked at the level of APC each institution could afford, based on its current subscription spend



APCs are affordable for large research-intensive institutions if grant funds are applied

\$1892: Average APC for partner institution publications in full OA journals



Strategy: Multi-Payer Model



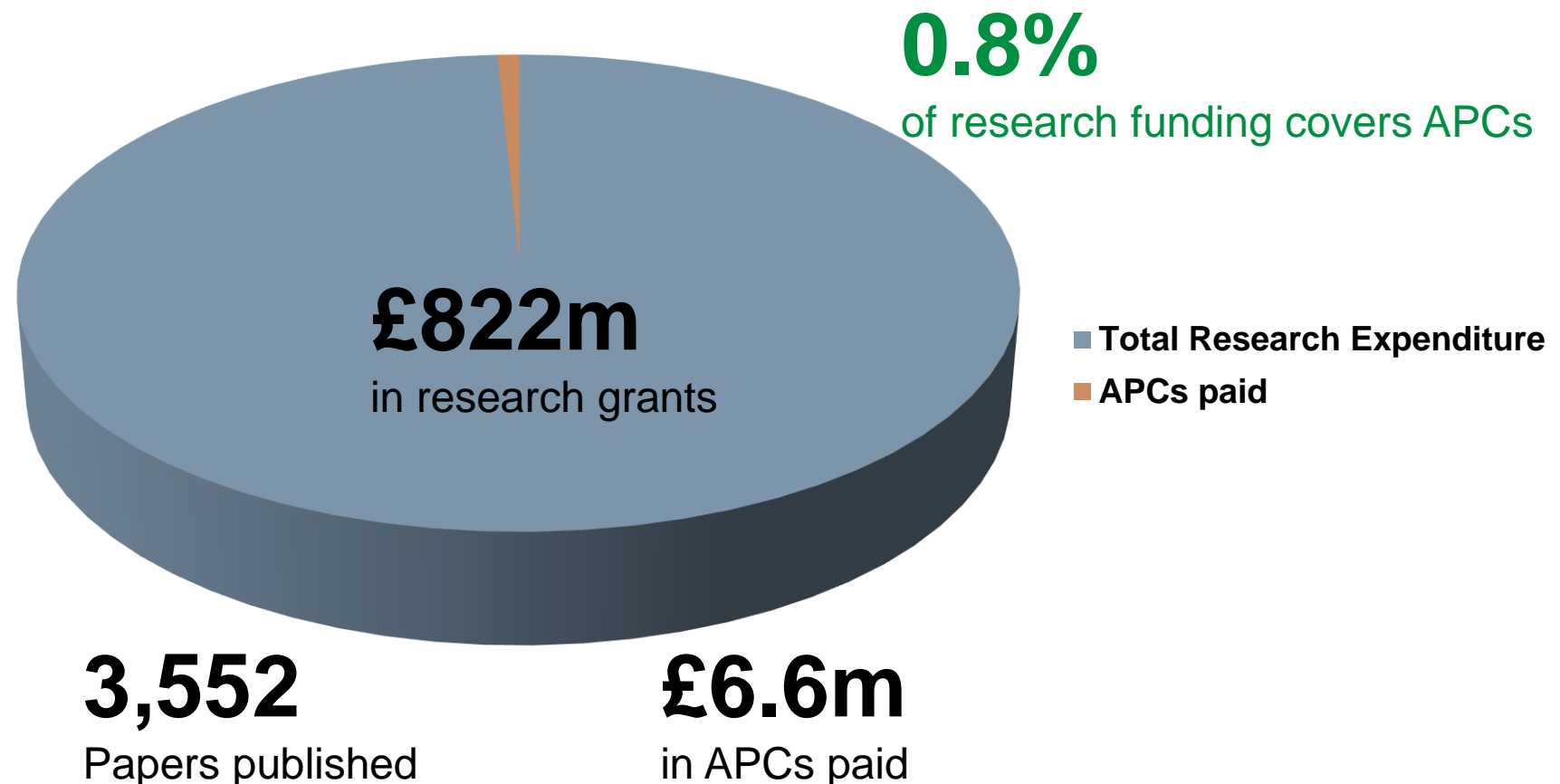
**Library subsidy
(linked to average cost
to publish)**



**Grants, Startup
packages,
discretionary research
funds**

Funder support for APCs is a bearable cost

Wellcome Trust 2016 Expenditure Data

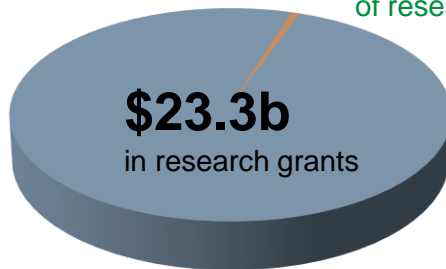


Estimated costs if US agencies funded APCs for all sponsored publications

NIH, 2016

0.9%

of research funding covers APCs



91,882

Papers published

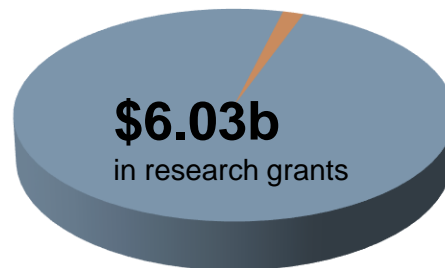
\$204m

In estimated APCs*

NSF, 2016

1.8%

of research funding covers APCs



48,926

Papers published

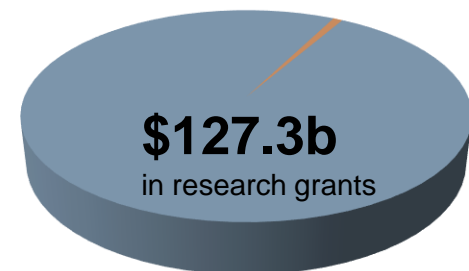
\$102m

In estimated APCs*

All US Federal Funding, 2013

0.8%

of research funding covers APCs



465,731

Papers published

\$1.03b

In estimated APCs*

* Assumes an average APC of \$2215
Publishing data from Web of Science, estimated APCs from UC *Pay It Forward* Study

“This generation [of digital natives] does not only have new technical skills but different approaches to reading and sharing information. That will change the modes of scholarly communication significantly.”

- Falk Reckling, FWF



Library-based OA Publishing



Open Library of
the Humanities

What is needed at the national policy level

- Consider whether to establish a national policy preference for immediate OA
- Support use of grant funds to subvent publication
 - Both direct and IDC
 - Library and other institutional expenditures in support of OA should be incorporated into F&A cost allocation formulas
 - Open access APC funds
 - Subscription redirection
 - Funding for open publishing infrastructure
 - Library-based publishing and repositories
- Undertake rigorous economic analysis to better understand the global market and how it is evolving – don't just leave this to other international stakeholders whose interests may be different from the U.S.
- Convene a study group on offsetting to better inform decision-making in this area
- Monitor global developments on an ongoing basis to identify opportunities for harmonization and large-scale transition

