

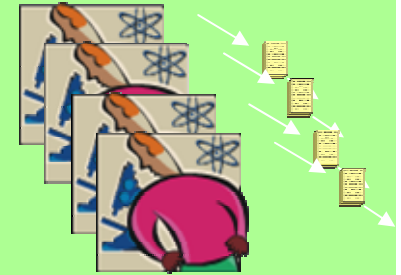
These slides were made by
Tim Brody and Stevan Harnad
(Southampton University)

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to promote open access and self-archiving
as long as their source is acknowledged.

The Research-Impact Cycle

Open access to research output
maximizes
research **access**
maximizing (and accelerating)
research **impact**

(hence also research **productivity**
and research **progress**
and their **rewards**)



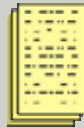
Limited Access: Limited Research Impact

12-18 Months

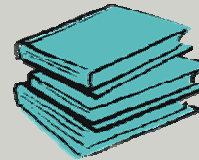
Impact cycle begins:
Research is done



Researchers write pre-refereeing "Pre-Print"



Submitted to Journal



Pre-Print reviewed by Peer Experts – "Peer-Review"



Pre-Print revised by article's Authors

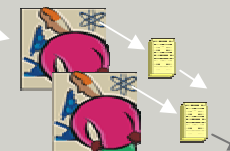
Refereed "Post-Print"
Accepted, Certified, Published by Journal



Researchers can access the Post-Print if their university has a subscription to the Journal



New impact cycles:
New research builds on existing research



Maximized Research Access and Impact Through Self-Archiving

12-18 Months

Impact cycle begins:
Research is done

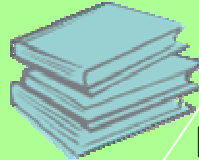


Researchers write pre-refereeing "Pre-Print"



Pre-Print is self-archived in University's Eprint Archive

Submitted to Journal

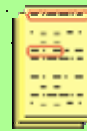


Pre-Print reviewed by Peer Experts – "Peer-Review"

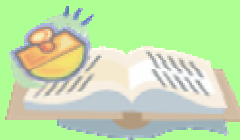
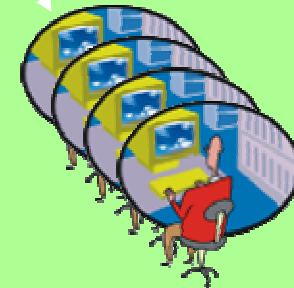


Pre-Print revised by article's Authors

Refereed "Post-Print" Accepted, Certified, Published by Journal



Post-Print is self-archived in University's Eprint Archive



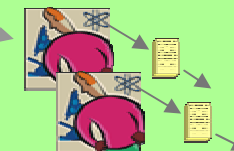
Researchers can access the Post-Print if their university has a subscription to the Journal



New impact cycles:
Self-archived research impact is greater (and faster) because access is maximized (and accelerated)



New impact cycles:
New research builds on existing research

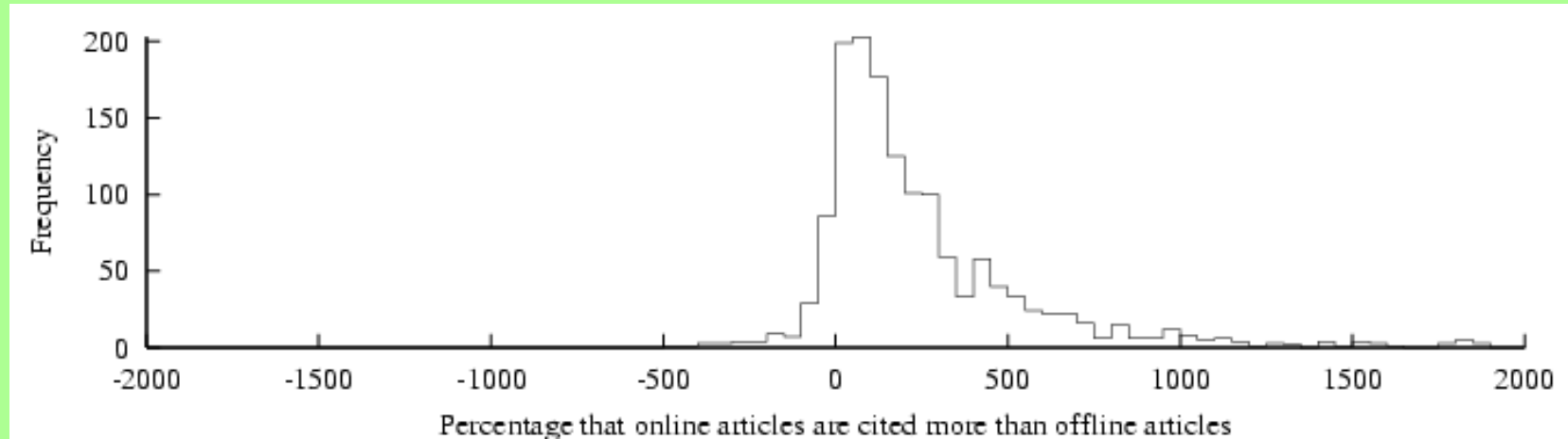


Research Impact



- I. measures the size of a research contribution to further research (“publish or perish”)
- II. generates further research funding
- III. contributes to the research productivity and financial support of the researcher’s institution
- IV. advances the researcher’s career
- V. promotes research progress

“Online or Invisible?” (Lawrence 2001)

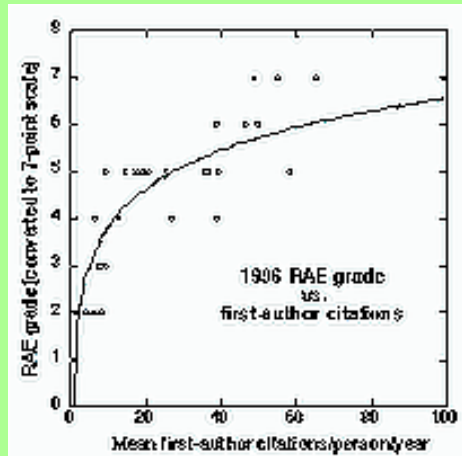


“average of 336% more citations to online articles compared to offline articles published in the same venue”

Lawrence, S. (2001) Free online availability substantially increases a paper's impact *Nature* 411 (6837): 521.

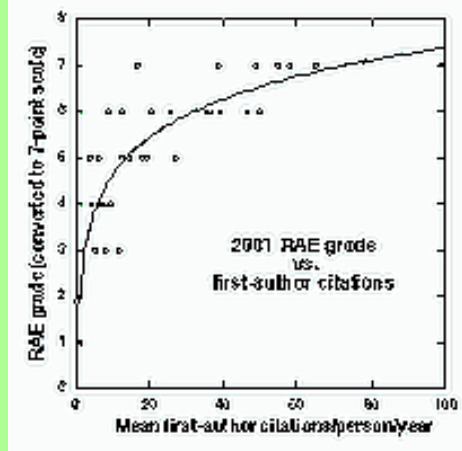
<http://www.neci.nec.com/~lawrence/papers/online-nature01/>

Research Assessment, Research Funding, and Citation Impact



“Correlation between RAE ratings and mean departmental citations +0.91 (1996) +0.86 (2001) (Psychology)”

“RAE and citation counting measure broadly the same thing”



“Citation counting is both more cost-effective and more transparent”

(Eysenck & Smith 2002)

<http://psyserver.pc.rhbnc.ac.uk/citations.pdf>

The objective of open-access

(and the motivation that will induce researchers to provide it)

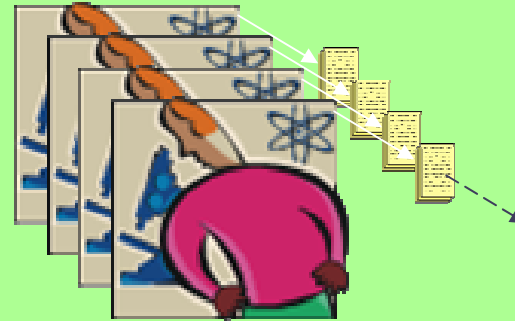
is:

- **not** to quarrel with, ruin or replace journals
(at all)
-

- **nor** is it to solve the budgetary problems of libraries
(and yet...)
- **nor** is it to provide access to teachers - students - the general public *(and yet...)*
- **nor** is it to provide access to the Developing World
(and yet...)

The objective of open-access is:

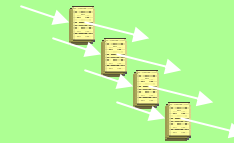
to maximize research
impact



by maximizing research
access



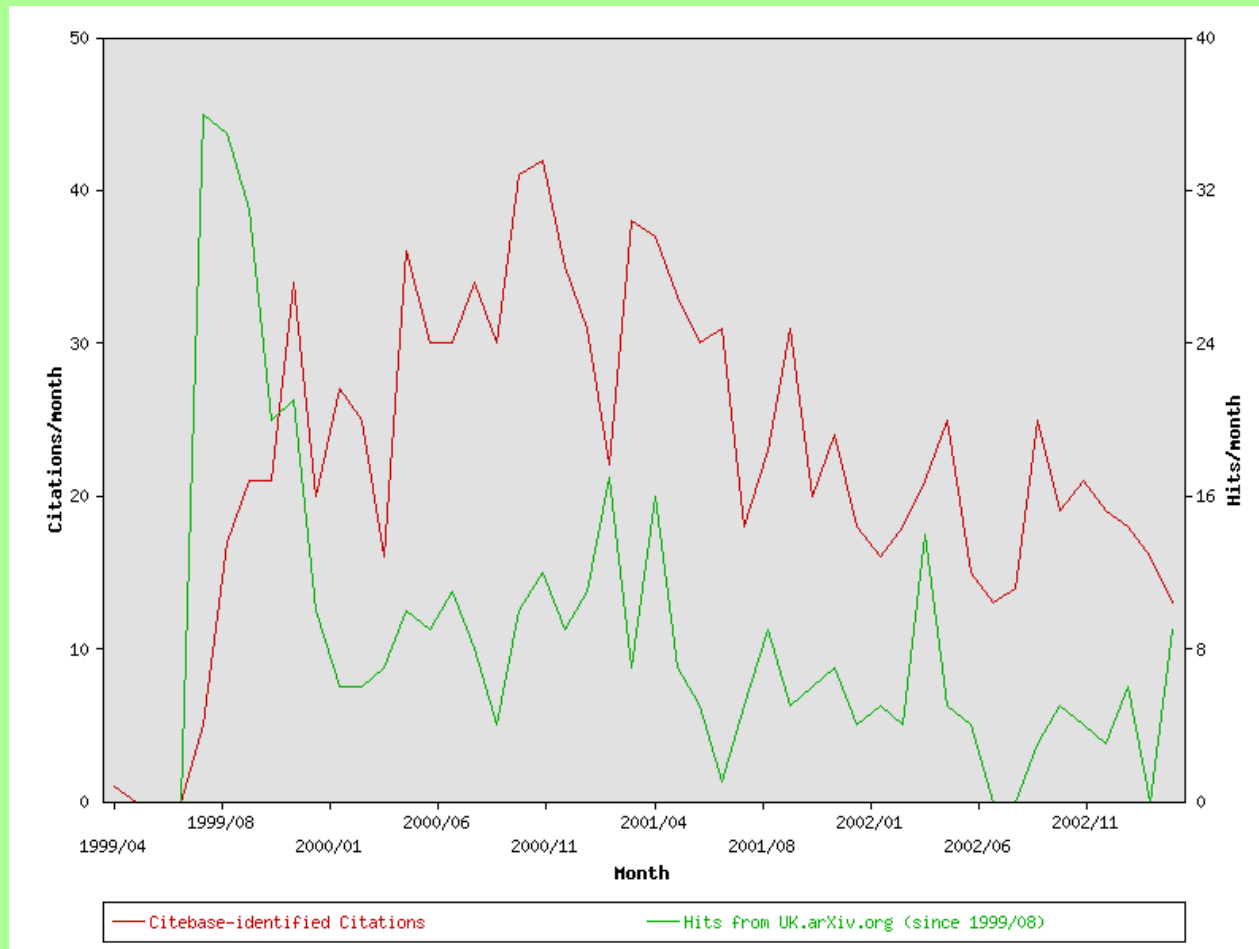
Some old and new scientometric (“publish or perish”) indices of research impact



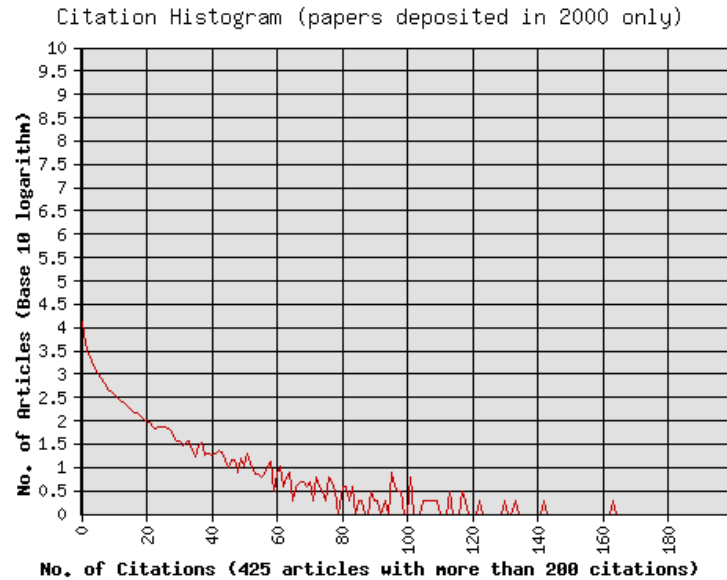
- Peer-review quality-level and citation-counts of the journal in which the article appears
- citation-counts for the article
- citation-counts for the researcher
- co-citations, co-text, “semantic web” (cited with whom/what else?)
- citation-counts for the preprint
- usage-measures (“hits,” webmetrics)
- time-course analyses, early predictors, etc. etc.

Time-Course of Citations (red) and Usage (hits, green)

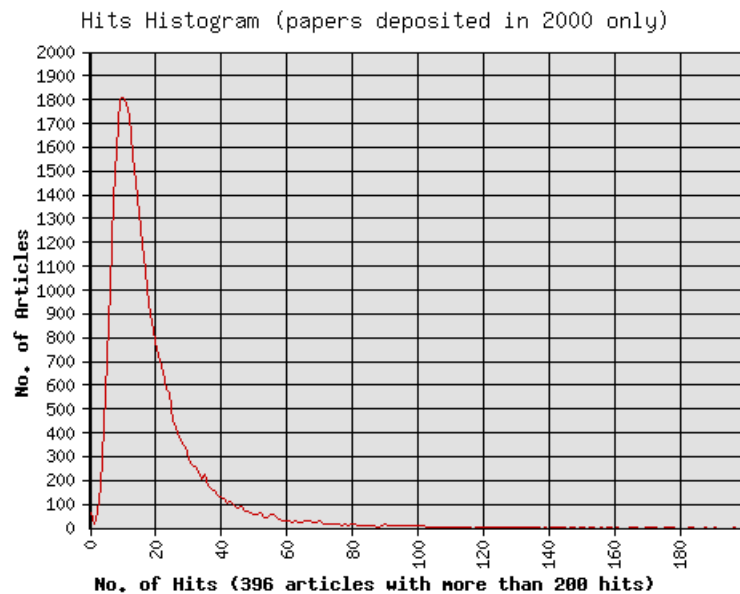
Witten, Edward (1998) String Theory and Noncommutative Geometry *Adv. Theor. Math. Phys.* 2 : 253



1. Preprint or Postprint appears.
2. It is downloaded (and sometimes read).
3. Eventually citations may follow (for more important papers)...
4. This generates more downloads...
5. More citations...



Most papers are not cited at all



Average UK downloads per paper: 10
(UK site only: 18 mirror sites in all)

Usage Impact

is correlated with **Citation Impact**

(Physics ArXiv: hep, astro, cond, quantum; math, comp)

<http://citebase.eprints.org/analysis/correlation.php>

(Quartiles Q1 (lo) - Q4 (hi))

All $r=.27$, $n=219328$

Q1 (lo) $r=.26$, $n=54832$

Q2 $r=.18$, $n=54832$

Q3 $r=.28$, $n=54832$

Q4 (hi) $r=.34$, $n=54832$

hep $r=.33$, $n=74020$

Q1 (lo) $r=.23$, $n=18505$

Q2 $r=.23$, $n=18505$

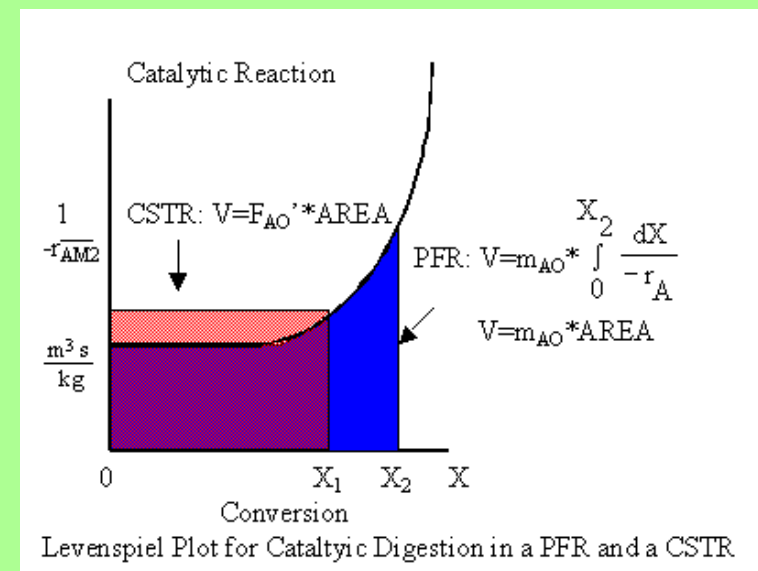
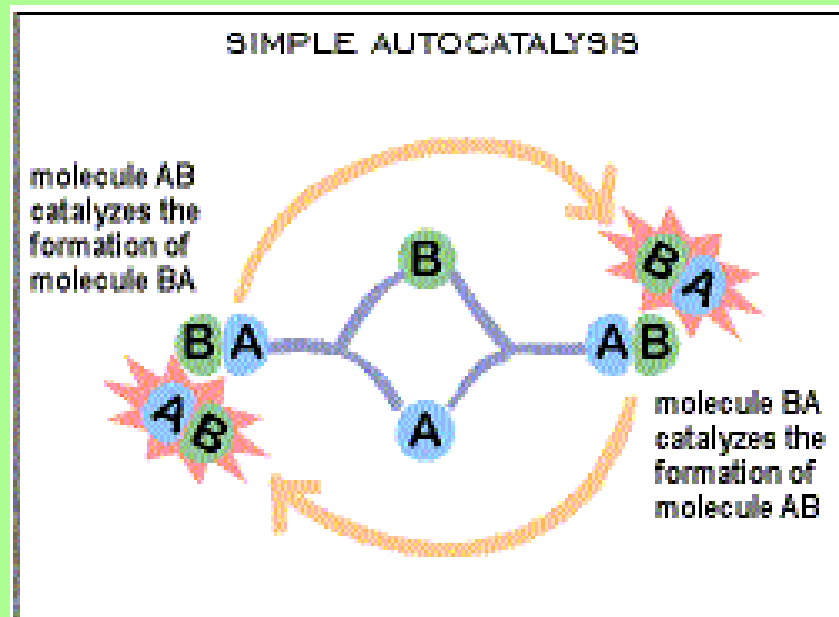
Q3 $r=.30$, $n=18505$

Q4 (hi) $r=.50$, $n=18505$

(correlation is highest for high-citation papers/authors)

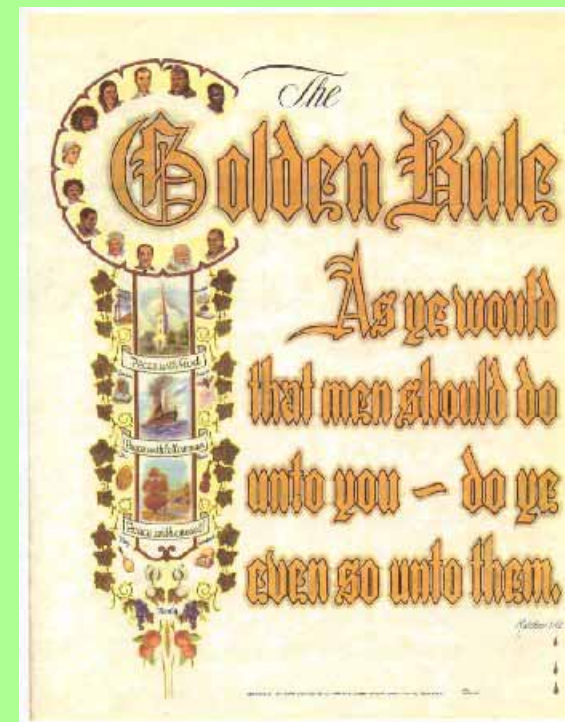
The Golden Rule for Open Access: Reciprocity

- (i) Researchers share a common stake with their own Institutions (*not their Disciplines*) in maximizing their joint research impact
- (ii) Institutions share a reciprocal stake in access to one another's (give-away) research output



“Self-archive unto others as ye would have them self-archive unto you.”

<http://www.ecs.soton.ac.uk/~harnad/Temp/unto-others.doc>



<http://www.ecs.soton.ac.uk/~harnad/Temp/self-archiving.ppt>



1. Universities:

**Adopt a policy mandating open access for
all university research output:**

**Extend existing
“Publish or Perish”
policies to**

“Publish with Maximal Impact”

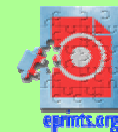
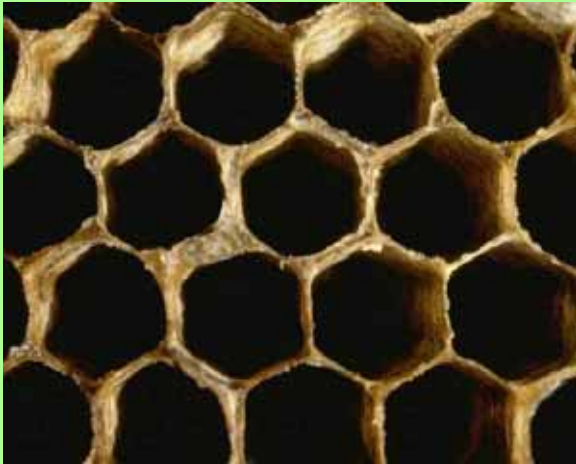
<http://www.eprints.org/signup/sign.php>

2. Departments:

Adopt a departmental policy mandating
Open Access for All Research Output

Create (and Fill):
OAI-compliant Eprint Archives

<http://software.eprints.org/handbook/departments.php>



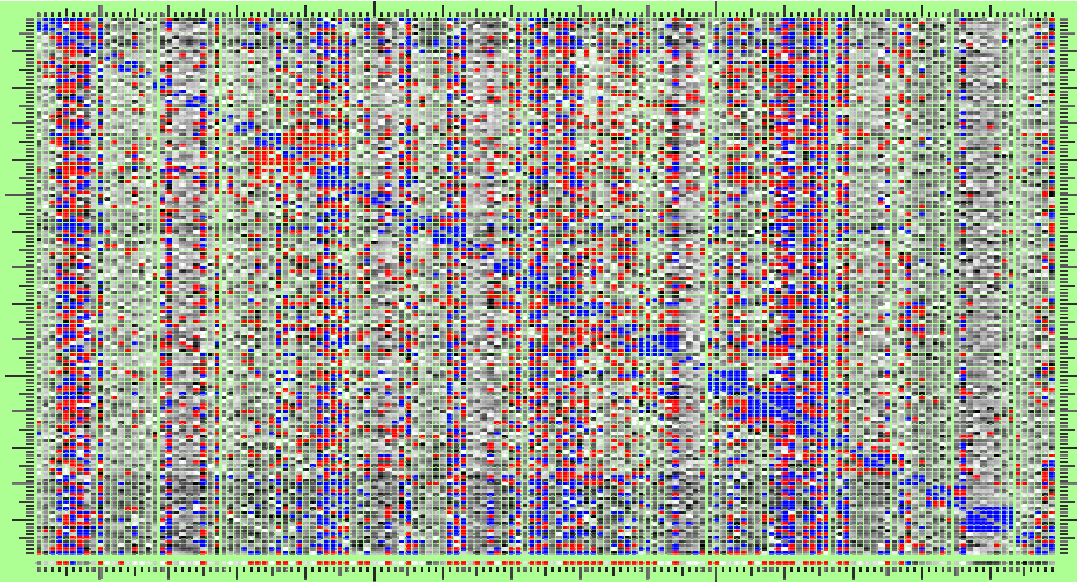
3. University Libraries:

Provide digital library support for university research self-archiving and archive-maintenance

(and if/when university toll-cancellation savings begin to grow, prepare to redirect 1/3 of annual windfall savings to cover open-access journal peer-review service-costs for university research output)



<http://www.eprints.org/self-faq/#libraries-do>



4. Universities and Research Institutions:

Mandate *open access* for all research output.

<http://www.eprints.org/signup/sign.php>

**Adopt a standardized online-CV
with harvestable performance indicators
and links to open-access full-texts**

(template and demo below)

[http://paracite.eprints.org/cgi-bin/rae front.cgi](http://paracite.eprints.org/cgi-bin/rae_front.cgi)

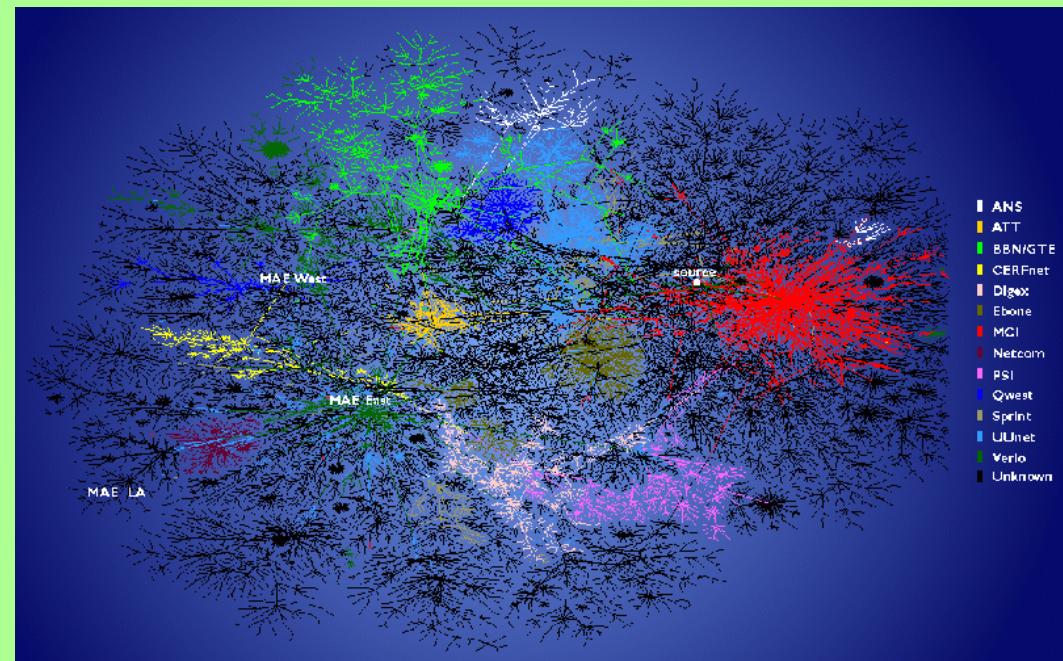
5. Research Funders:

Mandate *open access* for all research output.

See proposal for a UK national policy of open access for all refereed research output for research assessment...

<http://www.ecs.soton.ac.uk/~harnad/Temp/Ariadne-RAE.doc>

...as a model for the rest of the world



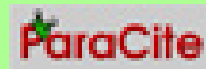
Tools for

- (a) creating OAI-compliant university **eprint archives**
- (b) parsing and finding cited references on the web,
- (c) reference-linking eprint archives,
- (d) doing scientometric analyses of research impact,
- (e) creating OAI-compliant **open-access journals**

<http://software.eprints.org>



<http://paracite.eprints.org/>



<http://opcit.eprints.org/evaluation/Citebase-evaluation/evaluation-report.html>



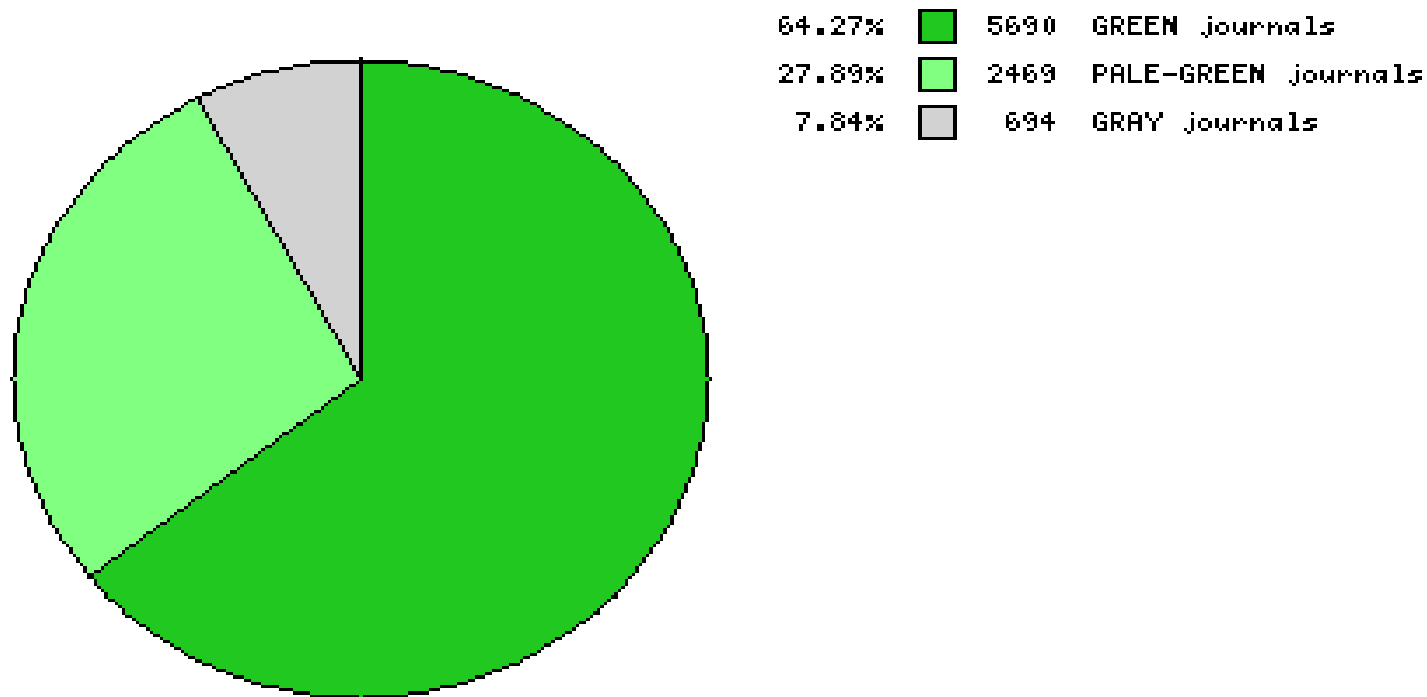
<http://citebase.eprints.org/help/>



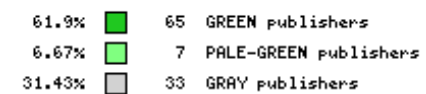
<http://psycprints.ecs.soton.ac.uk/>



Journal Policy Chart



Publisher Policy Chart



Current Journal Tally: 92% Green!

FULL-GREEN = Postprint 65%

PALE-GREEN = Preprint 28%

GRAY = neither yet 8%

Publishers to date: 107

Journals processed so far: 8919

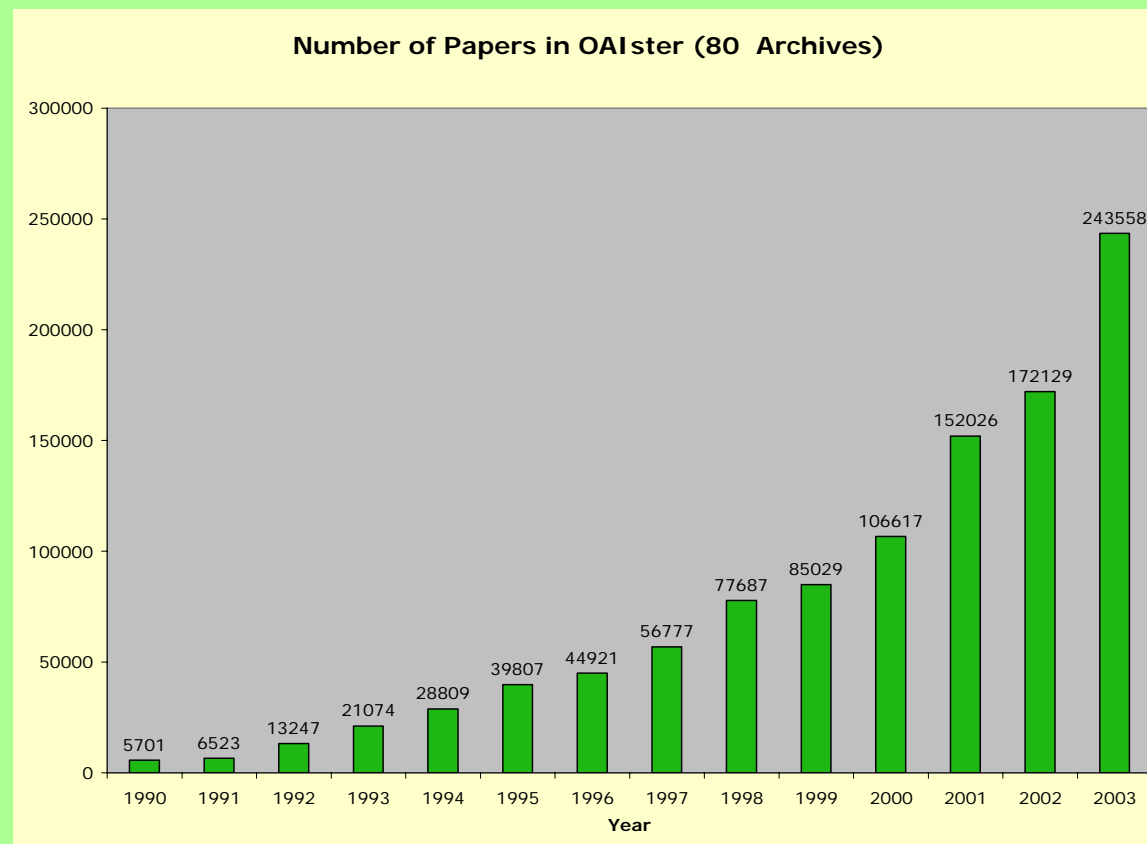
<http://romeo.eprints.org/stats.php>

What is needed for open access now:

1. **Universities**: Adopt a university-wide policy of making all university research output open access (via either the **gold** or **green** strategy)
2. **Departments**: Create and fill departmental OAI-compliant open-access archives
3. **University Libraries**: Provide digital library support for research self-archiving and open-access archive-maintenance. Redirect 1/3 of any eventual toll-savings to cover open-access journal peer-review service charges
4. **Promotion Committees**: Require a standardized online CV from all candidates, with refereed publications all linked to their full-texts in the open-access journal archives and/or departmental open-access archives
5. **Research Funders**: Mandate open access for all funded research (via either the **gold** or **green** strategy). Fund (fixed, fair) open-access journal peer-review service charges. Assess research and researcher impact online (from the online CVs).
6. **Publishers**: Become either **gold** or **green**.

OAIster, a cross-archive search engine, now covers over 250 OAI Archives (about half of them Eprints.org Archives) indexing over 3 million items (but not all research papers, and not all full-texts). Below are data for just the full-text research papers with 1990-2003 creation dates.

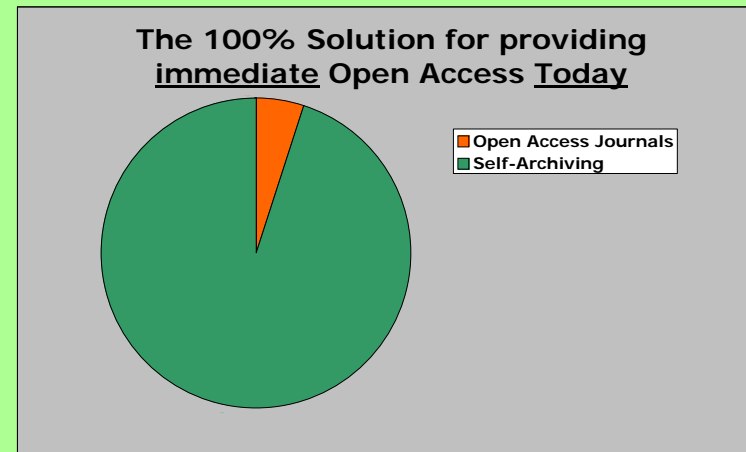
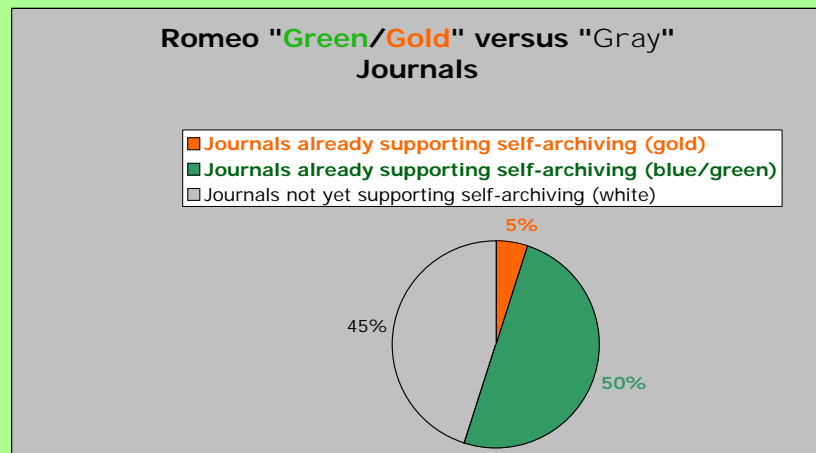
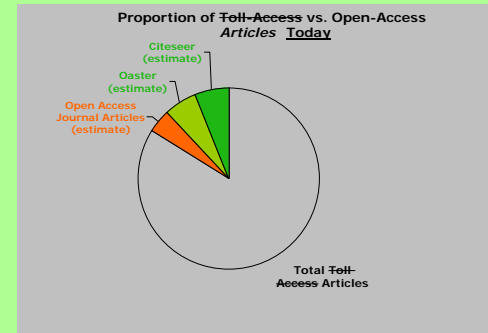
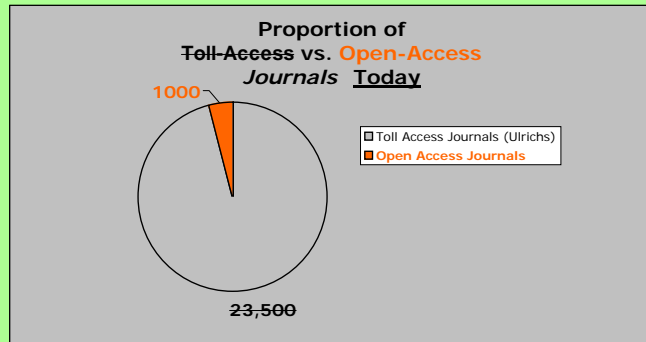
<http://oaister.umdl.umich.edu/o/oaister/>



The optimal open-access strategy today: **open-access publishing (5%)** <http://www.doaj.org/> plus **open-access self-archiving (95%)**:

Open access is possible today for 5% of articles by publishing them in **open access journals**, and for at least 83% (but probably closer to 95%) of the rest by **self-archiving** them.

- The optimal dual strategy is hence to
- (1) publish your article in an open-access journal if a suitable one exists and otherwise:
 - (2) publish your article in a toll-access journal and also self-archive it in your institutional open-access eprint archive.



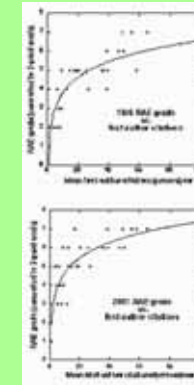
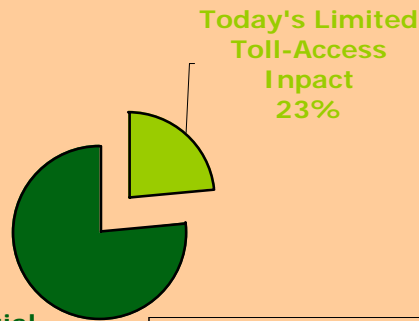
Quo usque tandem patientia nostra...?

How long will we go on letting our cumulative daily/monthly/yearly research-impact losses grow,

now that the online medium has made it all preventable?



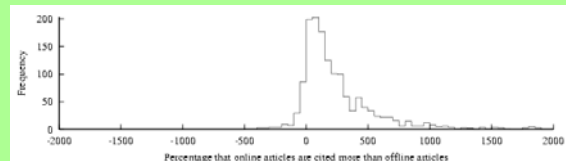
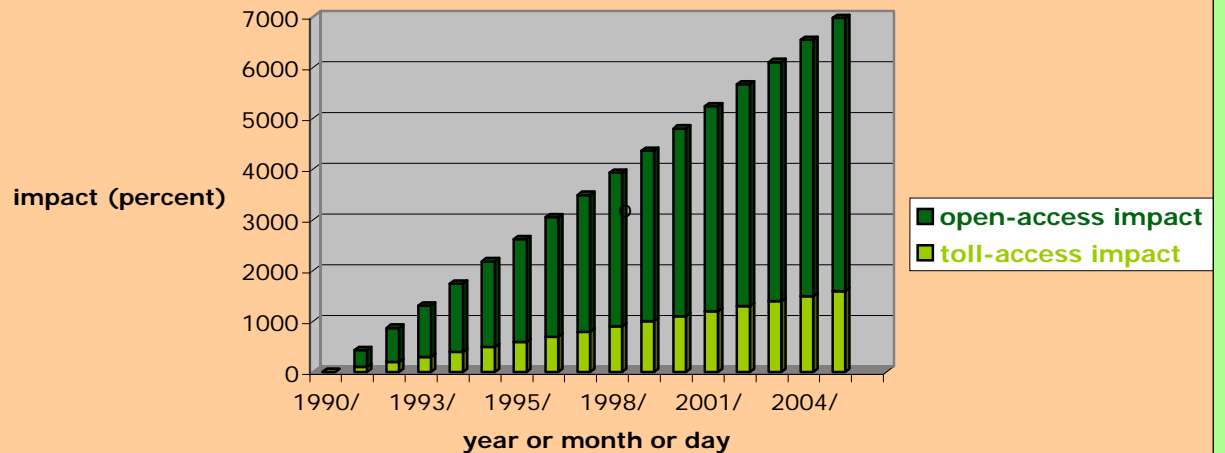
What we stand to gain:



.91 correlation with UK research ranking and funding

Lost Potential Open-Access Impact
77%

Yearly/Monthly/Daily Impact Loss



336% higher impact



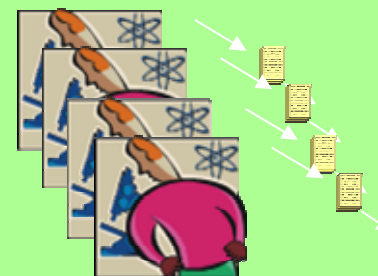
The two open-access strategies: **Gold** and **Green**

Open-Access Publishing (OApub) (BOAI-2)

1. Create or Convert 23,000 open-access journals (1000 exist currently)
2. Find funding support for open-access publication costs (\$500-\$1500+)
3. Persuade the authors of the annual 2,500,000 articles to publish in new open-access journals instead of the existing toll-access journals

Open-Access Self-Archiving (OAarch) (BOAI-1)

1. Persuade the authors of the annual 2,500,000 articles they publish in the existing toll-access journals to also self-archive them in their institutional open-access archives.



Dual open-access strategy

Gold: Publish your articles in an open-access journal whenever a suitable one exists today (currently 1000, <5%)

and

Green: Publish the rest of your articles in the toll-access journal of your choice (currently 23,000, >95%) and self-archive them in your institutional open-access eprint archives.



To Maximize Research Impact:

Research Funders:

1. Mandate open access provision for all funded research via the **gold** or **green** strategies
2. (Help cover **open-access journal** charges)

Research Institutions:

1. Mandate open access provision for all research output via the **gold** or **green** strategies
2. (Libraries redirect 1/3 of any eventual toll-cancellation windfall savings toward funding open-access journal charges)

Outcomes:

1. Authors either find an open-access (**gold**) journal or a green journal to publish in.
2. **Gray publishers will turn green.**
3. Eventually **green** publishers might turn **gold**, but in the meanwhile:
4. Open-access itself increases to 100%.
5. *Eventually toll-cancellation savings might increase to 100%*
6. *If so, then 1/3 of the growing institutional windfall toll-cancellation savings can pay for all institutional **gold** journal publication charges (peer review)*



Berlin Declaration on



Open Access to Knowledge in the Sciences and Humanities

<http://www.zim.mpg.de/openaccess-berlin/berlindeclaration.html>

The pertinent passages:

“Open access [means]:

“1. free... [online, full-text] access

“2. A complete version of the [open-access] work... is deposited...
in at least one online repository... to enable open access,
unrestricted distribution, [OAI] interoperability, and long-term
archiving.

“[W]e intend to... encourag[e].. our researchers/grant recipients to
publish their work according to the principles of... open access.”

Budapest Open Access Initiative

The BOAI Self-Archiving FAQ (BOAI-1)

<http://www.eprints.org/self-faq/>

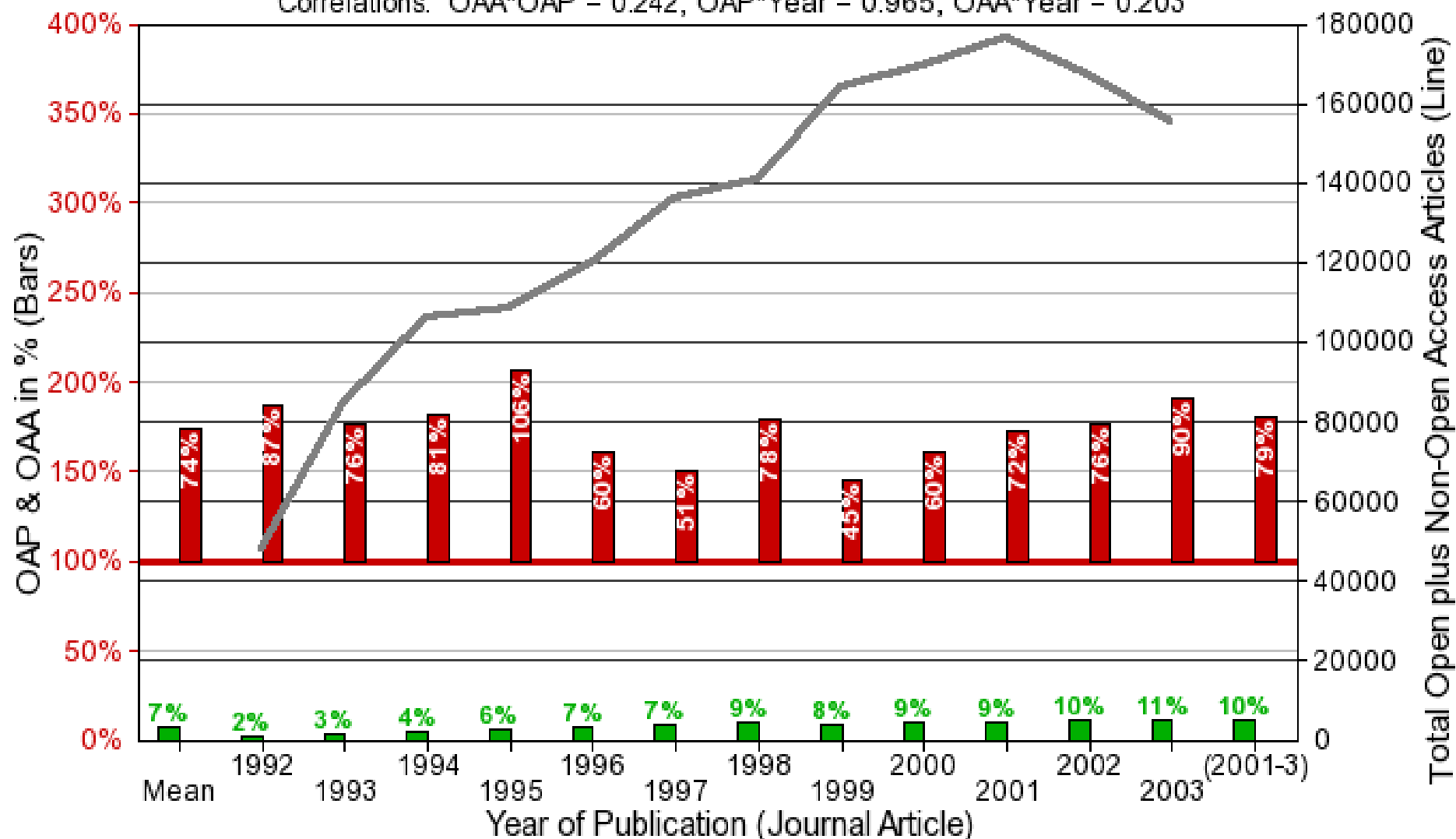
<http://www.soros.org/openaccess/>



OA vs. Non-OA Citation Impact Advantage (All fields)

On average 319.9 journals/year (incl. self-citations) - Fri Aug 20 20:37:17 2004

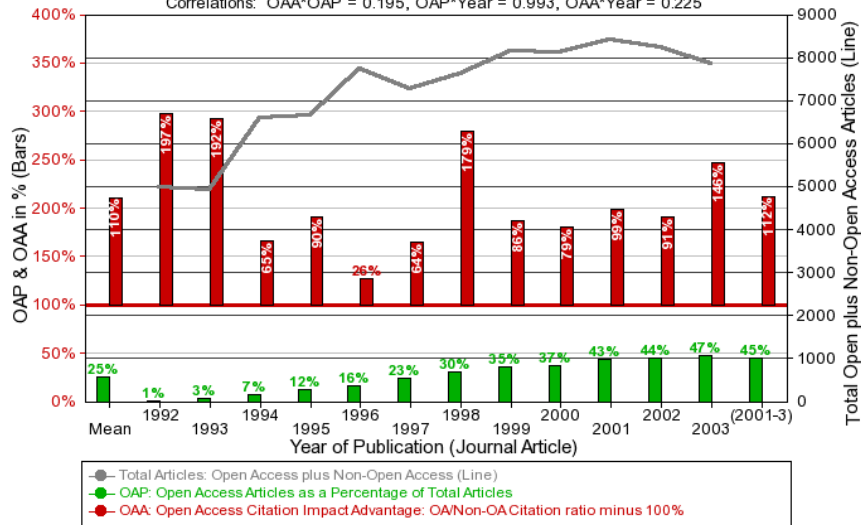
Correlations: $OAA * OAP = 0.242$, $OAP * Year = 0.965$, $OAA * Year = 0.203$



- Total Articles: Open Access plus Non-Open Access (Line)
- OAP: Open Access Articles as a Percentage of Total Articles
- OAA: Open Access Citation Impact Advantage: OA/Non-OA Citation ratio minus 100%

OA vs. Non-OA Citation Impact Advantage (Astronomy & Astrophysics)

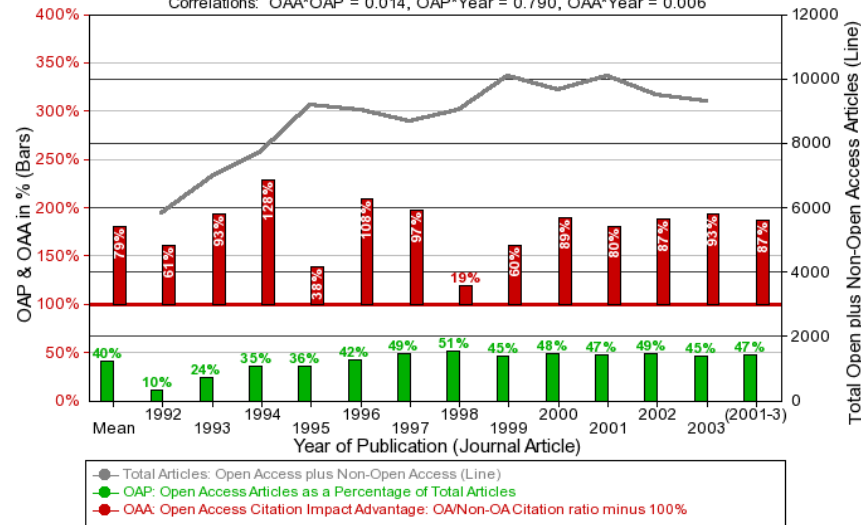
On average 20.1 journals/year (incl. self-citations) - Fri Aug 20 20:37:18 2004
 Correlations: $OAA*OAP = 0.195$, $OAP*Year = 0.993$, $OAA*Year = 0.225$



Astrophysics

OA vs. Non-OA Citation Impact Advantage (Nuclear & Particle Physics)

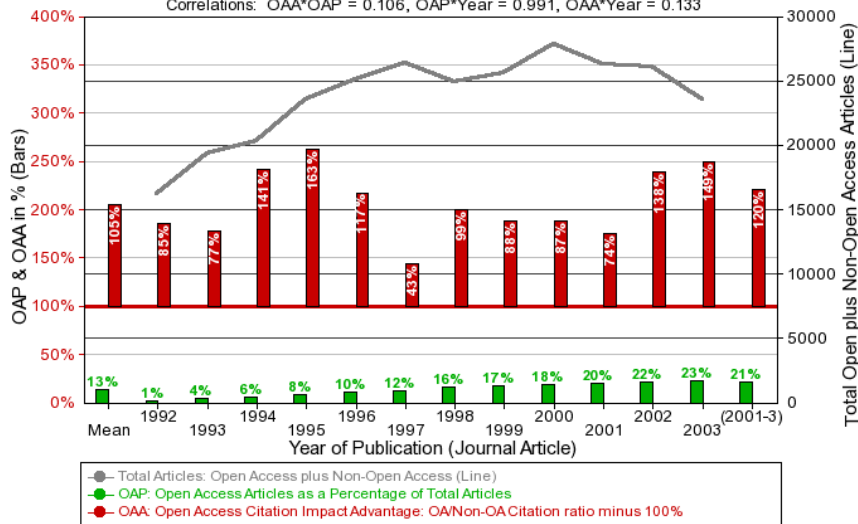
On average 15.9 journals/year (incl. self-citations) - Fri Aug 20 20:37:28 2004
 Correlations: $OAA*OAP = 0.014$, $OAP*Year = 0.790$, $OAA*Year = 0.006$



HEP/Nuclear Physics

OA vs. Non-OA Citation Impact Advantage (General Physics)

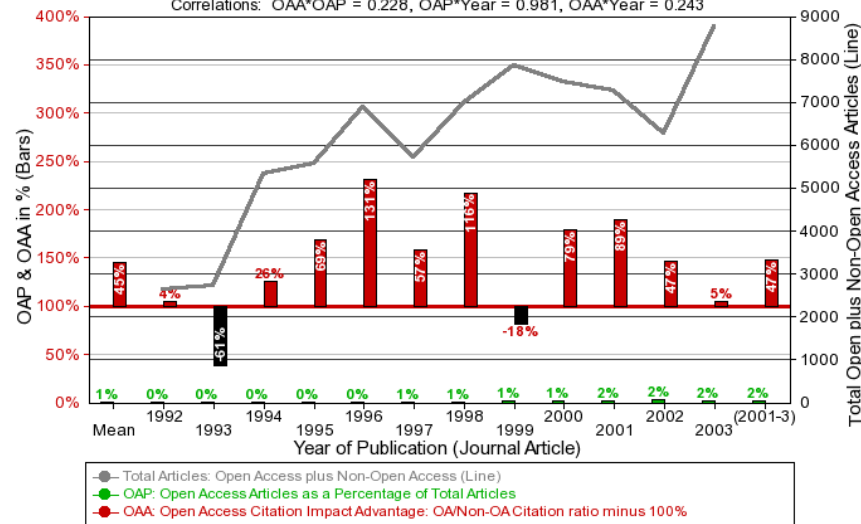
On average 65.1 journals/year (incl. self-citations) - Fri Aug 20 20:37:26 2004
 Correlations: $OAA*OAP = 0.106$, $OAP*Year = 0.991$, $OAA*Year = 0.133$



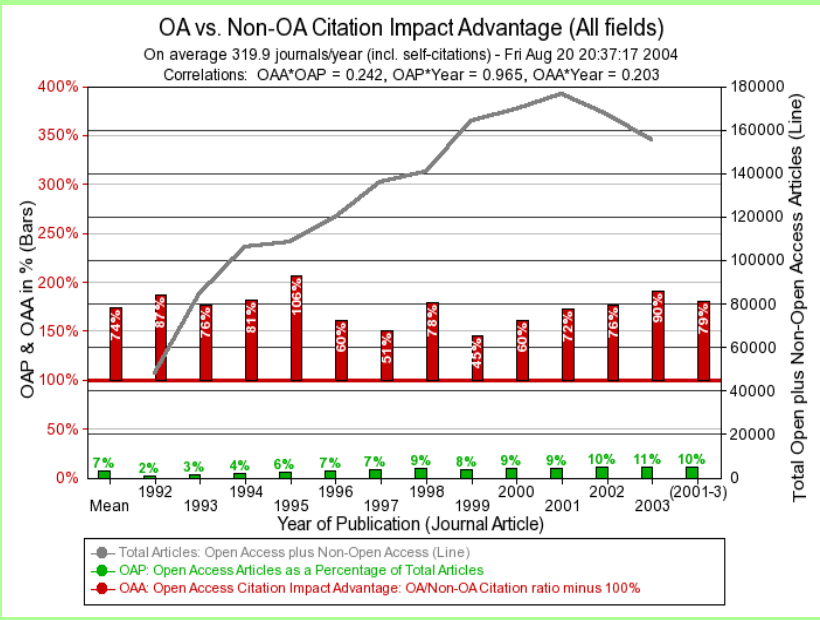
General Physics

OA vs. Non-OA Citation Impact Advantage (Chemical Physics)

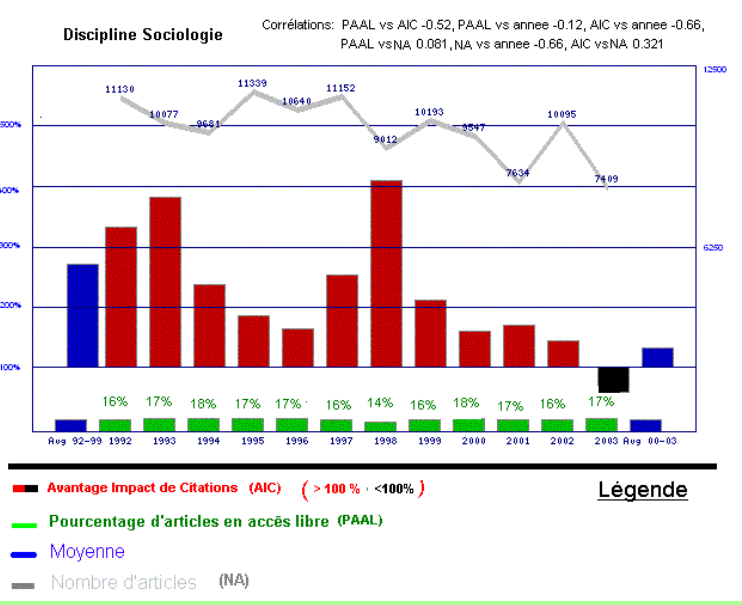
On average 8.2 journals/year (incl. self-citations) - Fri Aug 20 20:37:24 2004
 Correlations: $OAA*OAP = 0.228$, $OAP*Year = 0.981$, $OAA*Year = 0.243$



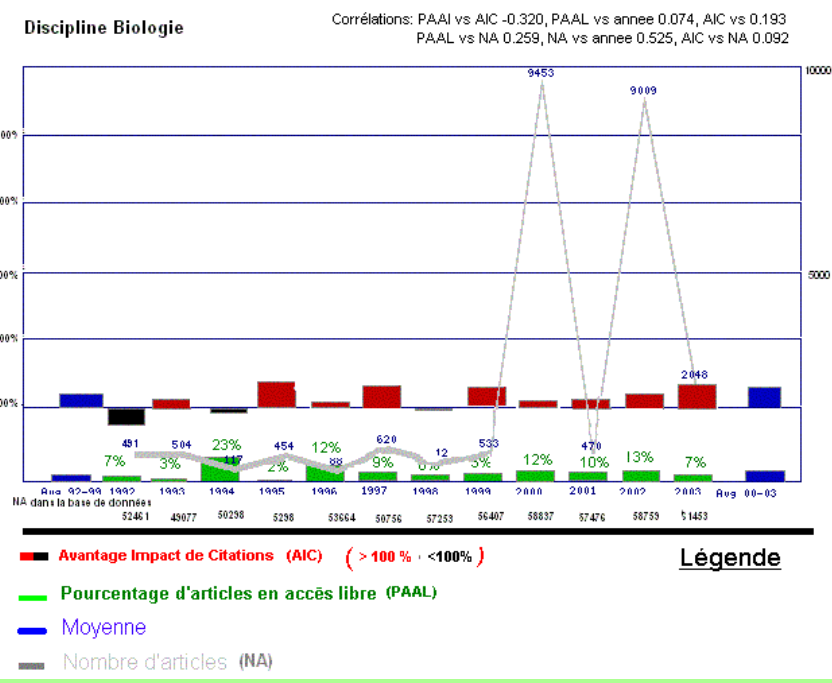
Chemical Physics



Physics/Mathematics



Social Sciences



Biological Sciences

UK House of Commons Science and Technology Committee Recommendation to Mandate Institutional Self-Archiving

“This Report recommends that **all UK higher education institutions establish institutional repositories** on which their published output can be stored and from which it can be read, free of charge, online.



“It also recommends that **Research Councils and other Government Funders mandate their funded researchers to deposit a copy of all of their articles** in this way.”

US House of Representatives Appropriations Committee Recommendation that the NIH should mandate self-archiving

(since passed by both House and Senate)



“The Committee... recommends NIH develop a policy... **requiring that a complete electronic copy of any Manuscript reporting work supported by NIH grants or contracts be... [made] freely and continuously available upon acceptance of the manuscript for publication** in any scientific journal.”

Institutional Archives Registry: (221 Archives Registered)

<http://archives.eprints.org/eprints.php>

Archive Type

- * Research Institutional or Departmental (117)
- * Research Cross-Institution (32)
- * e-Theses (27)
- * Demonstration (22)
- * e-Journal/Publication (11)
- * Other (10)
- * Database (2)

Software

- * GNU EPrints v2 (122)
- * GNU EPrints v1 (18)
- * DSpace (28)
- * ARNO (2)
- * DiVA (1)
- * CDSWare (1)
- * other (49)

Country

- * United States (57)
- * United Kingdom (33)
- * Canada (17)
- * France (15)
- * Sweden (13)
- * Germany (12)
- * Netherlands (12)
- * Italy (11)
- * Australia (9)
- * India (4)
- * Brazil (4)
- * Hungary (4)
- * China (4)
- * Denmark (4)
- * Mexico (2)
- * Ireland (2)
- * Austria (2)
- * Japan (2)
- * Portugal (2)
- * South Africa (2)
- * Belgium (2)
- * Slovenia (1)
- * Finland (1)
- * Israel (1)
- * Norway (1)
- * Switzerland (1)
- * Croatia (1)
- * Peru (1)
- * Spain (1)

RoMEO Directory of Publishers who have given their Green Light to Self-Archiving

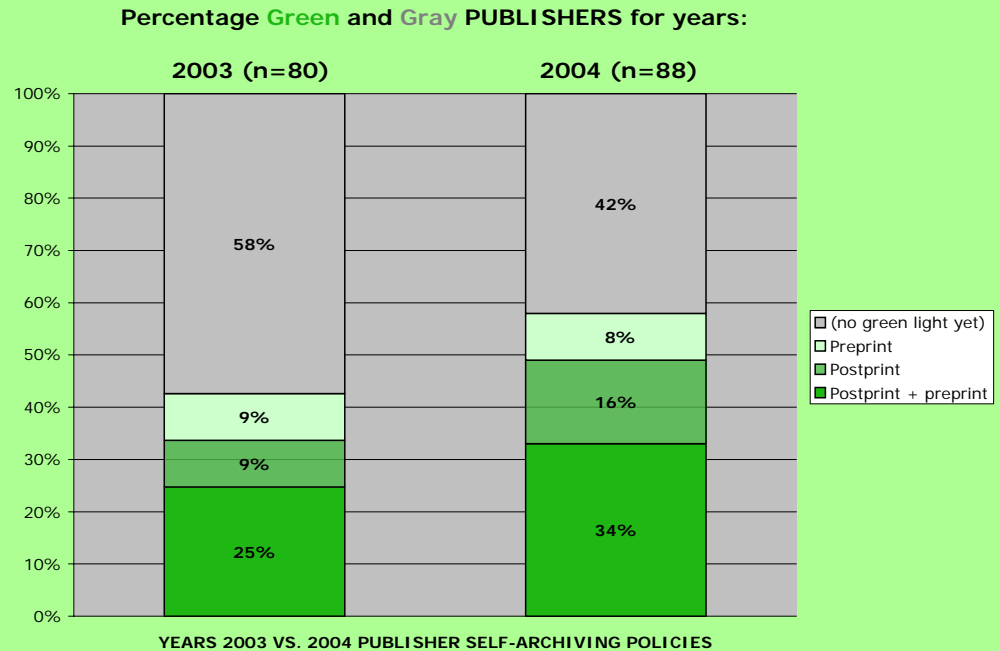
<http://www.sherpa.ac.uk/romeo.php>

<http://romeo.eprints.org>

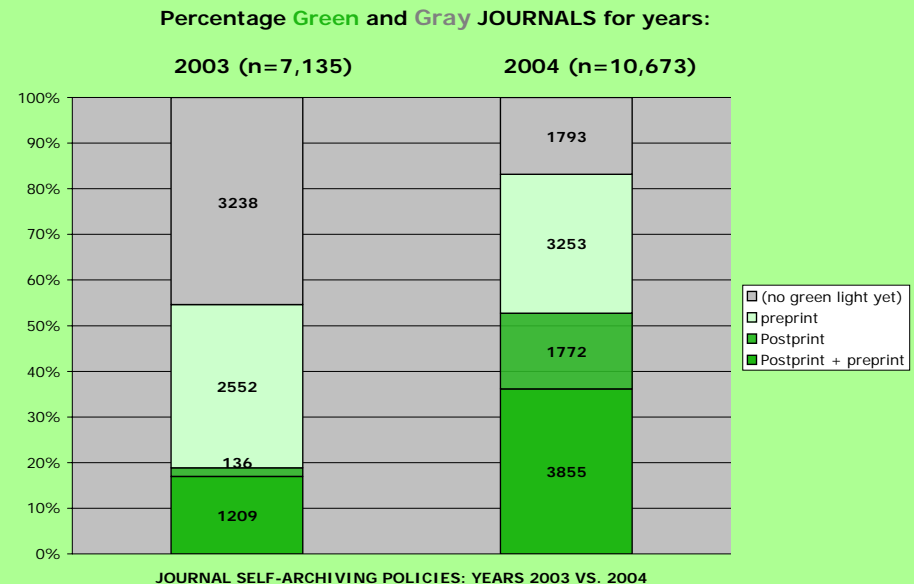
Proportion of journals already formally giving their **green light** to author/institution self-archiving (**already 92%**) continues to grow:

Green light to self-archive:	Journals	%	Publishers	%
	8919	(100%)	107	(100%)
Neither yet	695	8%	34	32%
Preprint	2470	+27% (= 92%)	7	+7% (= 69%)
Postprint	5754	65%	66	62%

Percentage of **green PUBLISHERS** grew from **42% - 58%** from 2003-2004

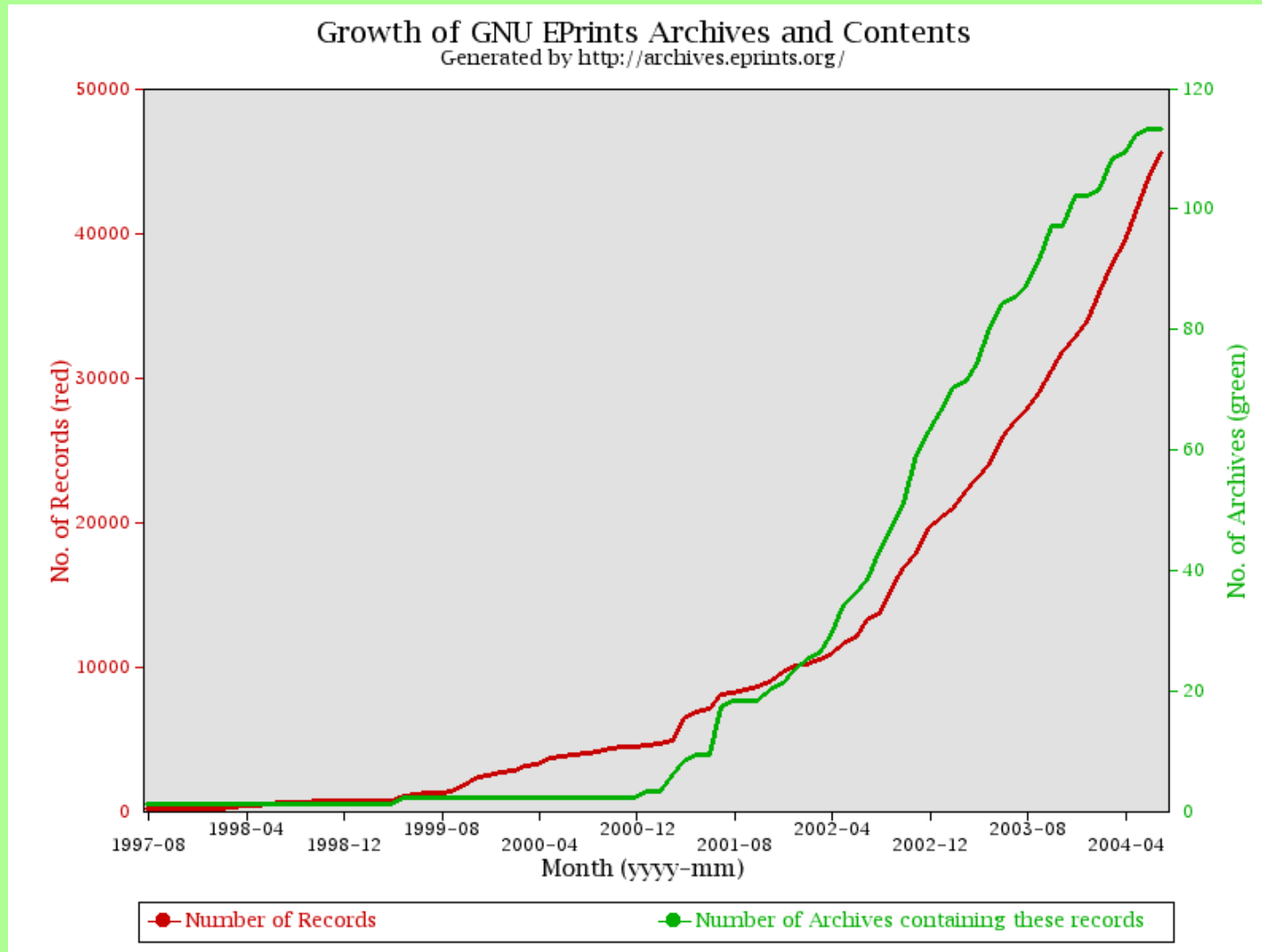


Percentage of **green JOURNALS** grew from **55% - 83%** from 2003-2004



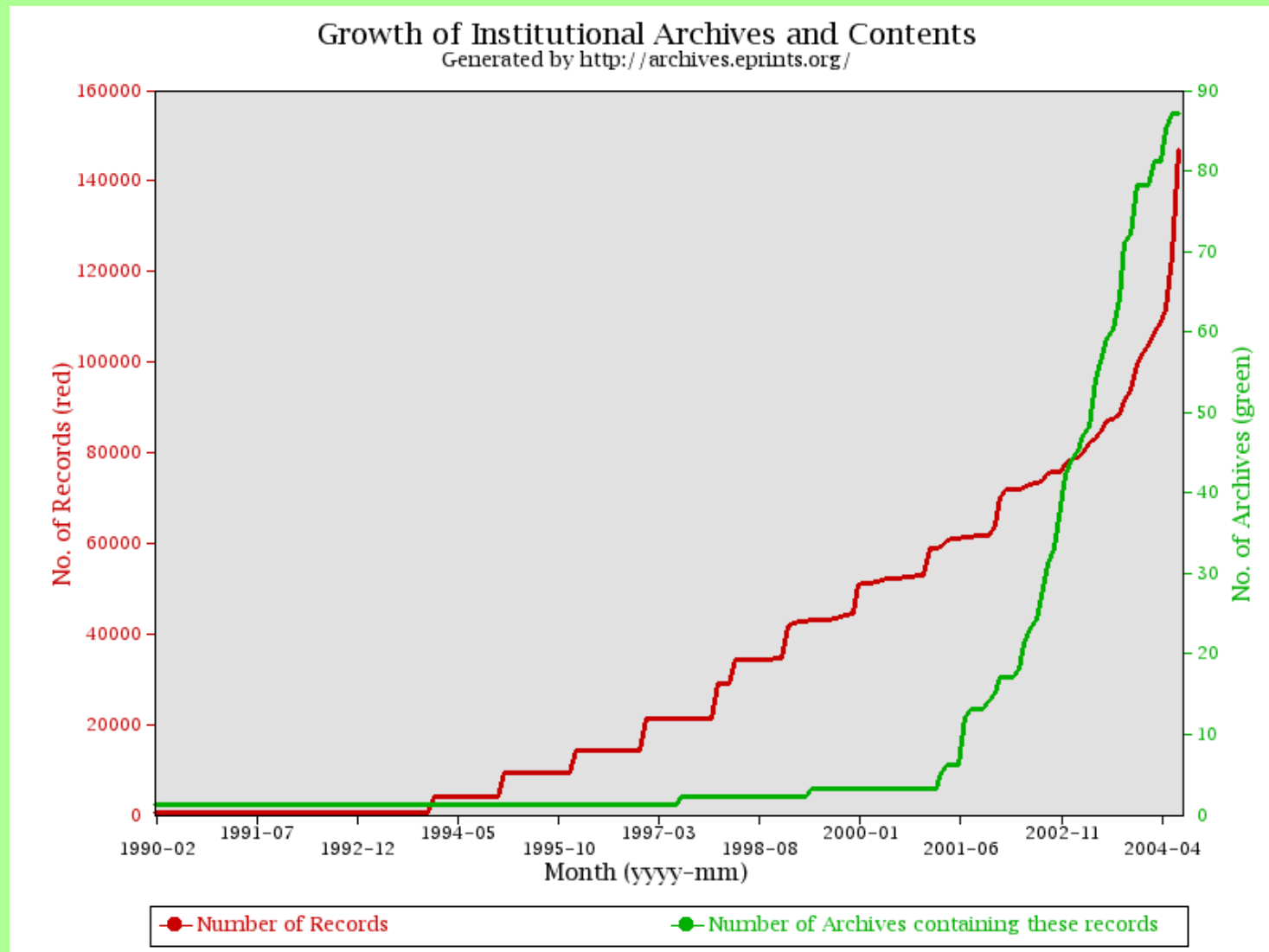
Growth of University Eprints.org Archives and Contents

<http://archives.eprints.org/eprints.php>



Archives flagged as 'Research Institutional'. The timestamps of records as exported by the archive's OAI-PMH interface is used to plot a cumulative graph of records over time. The date of the earliest OAI-PMH record is used to show the number of cumulative archives over time.

<http://archives.eprints.org/eprints.php>



Declaration of Institutional Commitment to implementing the Berlin Declaration on open-access provision

Our institution hereby commits itself to adopting and implementing an official institutional policy of providing open access to our own peer-reviewed research output -- i.e., toll-free, full-text online access, for all would-be users worldwide -- in accordance with the Budapest Open Access Initiative and the Berlin Declaration

UNIFIED OPEN-ACCESS PROVISION POLICY:

(OAJ) Researchers publish their research in an open-access journal if a suitable one exists otherwise

(OAA) Researchers publish their research in a suitable toll-access journal and also self-archive it in their own research institution's open-access research archive.

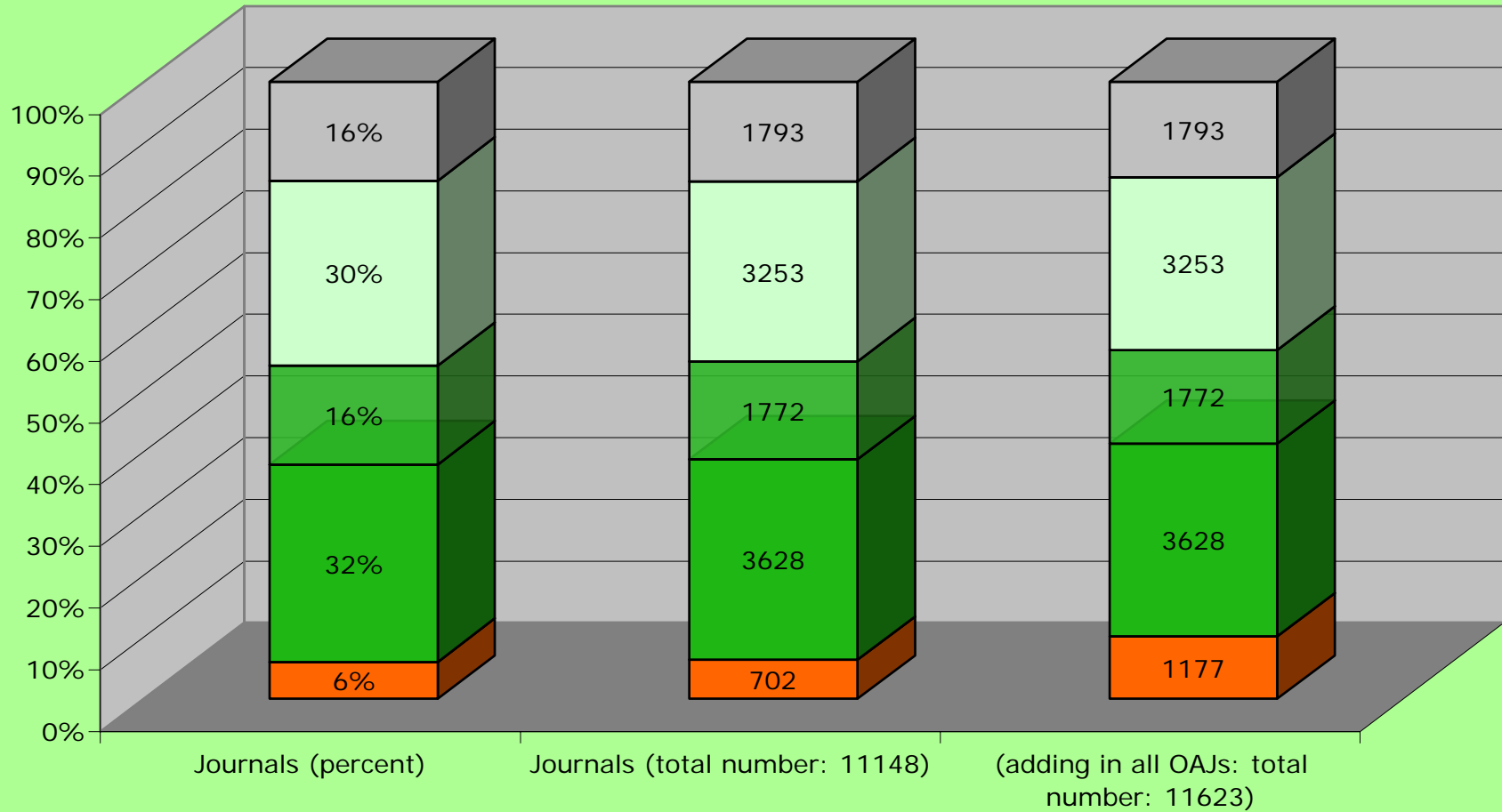
To sign: <http://www.eprints.org/signup/sign.php>

A JISC survey (Swan & Brown 2004) "asked authors to say how they would feel if **their employer or funding body required them to deposit copies of their published articles in one or more... repositories. The vast majority... said they would do so willingly.**"

http://www.jisc.ac.uk/uploaded_documents/JISCOAreport1.pdf

Gold (OA), Green (S-A) & Gray Journals

- GRAY: No green light yet
- PALE-GREEN: Green Light for Author Preprint Self-Archiving (S-A)
- GREEN (spotted): Green Light for Author Postprint Self-Archiving (S-A)
- GREEN (solid): Green Light for Author Postprint and Preprint Self-Archiving (S-A)
- GOLD: Open Access Journals (OAJ) <http://www.doaj.org/>

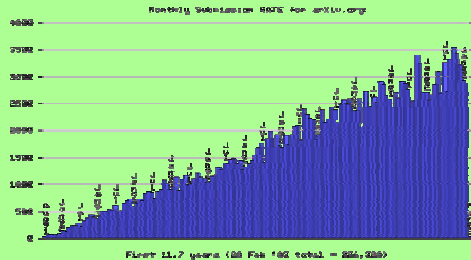


Central/Discipline-Based Self-Archiving **VS** ***Distributed Institutional/Departmental Self-Archiving***

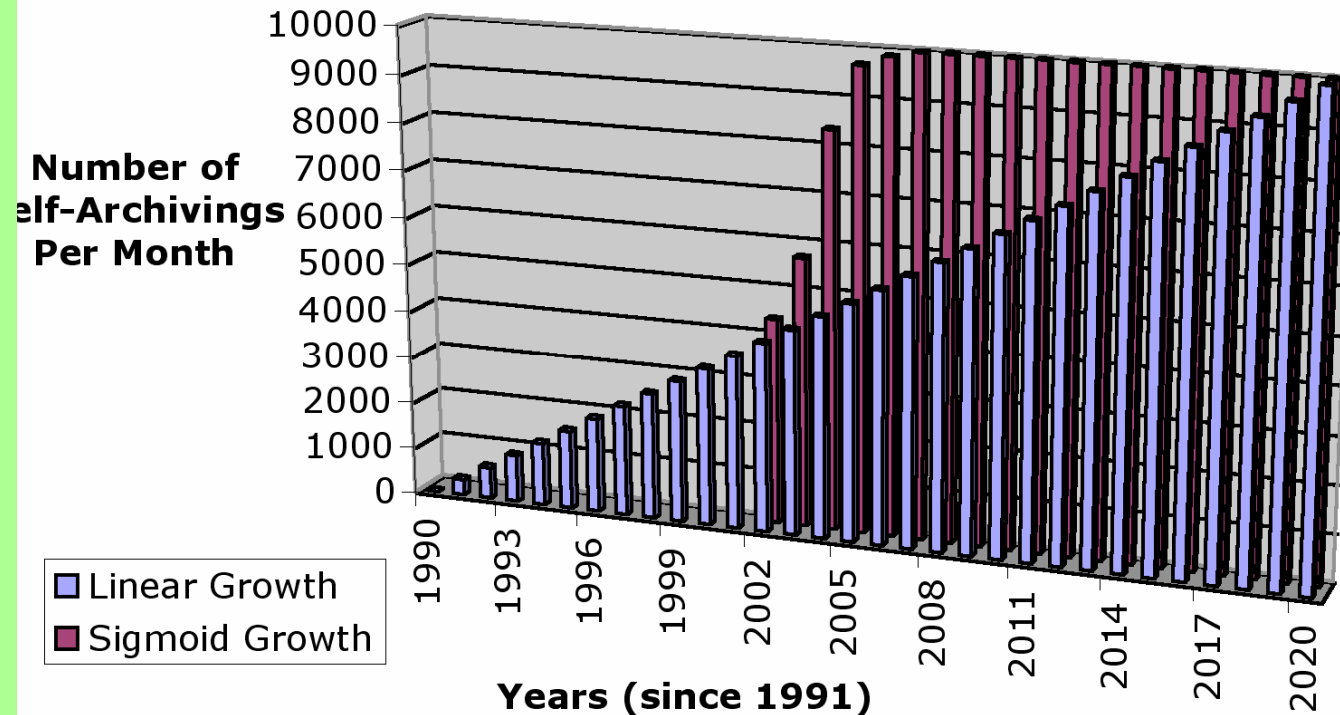
- All OAI-compliant Archives (Central and Institutional) are interoperable and functionally equivalent
- Researchers and their institutions (but not researchers and their disciplines) share a common stake in their research impact
- A self-archiving mandate will propagate quickly and naturally across departments and institutions if archiving is institutional, not if archiving is central
- Institutions can monitor compliance, measure impact, and share the distributed archiving cost
- Institutional archive contents can be automatically harvested into central archives (metadata alone, or full-texts too)
- UK JISC report recommends distributed self-archiving and harvesting rather than central archiving
- 92% of journals have given green light to author self-archiving but many are reluctant to endorse 3rd-party archiving (which could sanction to free-loading rival re-publishers)

Even the fastest-growing archive, the Physics ArXiv, is still only growing linearly (since 1991):

At that rate, it would still take a decade before we reach the first year that all physics papers for *that year* are openly accessible (Ebs Hilf estimates 2050!)



Physics ArXiv Growth (1991-2003-2020)



Four reasons for research impact

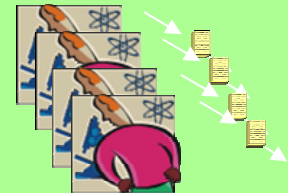
(shared by researcher and institution but not by researcher and discipline)

1. Contributions to Knowledge
2. Employment, Salary, Promotion, Tenure, Prizes
3. Research Funding, Resourcing
4. Institutional Overheads, Prestige (attracting teachers, students, researchers, industrial collaboration)

Don't conflate the different forms of
institutional archiving:

Only the 5th is relevant here

1. Institutional digital collection management
2. Institutional digital preservation
3. Institutional digital courseware
4. Institutional digital publishing
5. **Institutional self-archiving of refereed research output**



Would-be peer review reformers, please remember:

- The pressing problem is to free peer-reviewed research access and impact from tolls:
- not from peer review!

- If you have a peer-review reform hypothesis,
- please take it elsewhere,
- and test it,
- and then let us all know how it comes out...

- Meanwhile,
- please let us free peer-reviewed research
- such as it is!

Universal Access Through Affordable Licensing?

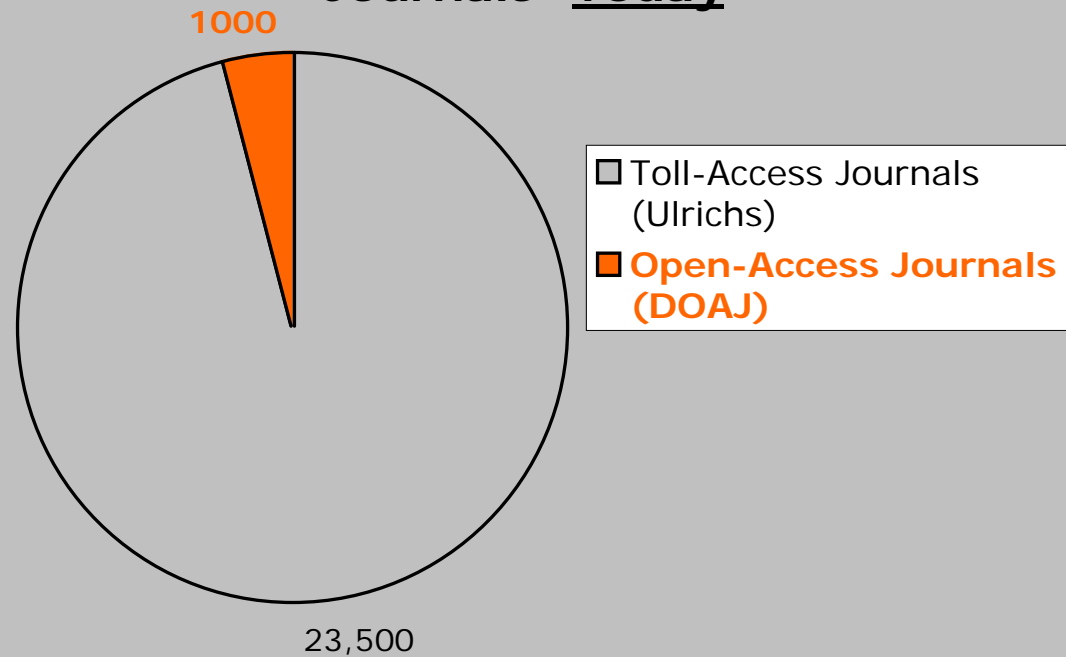
Open access through author/institution self-archiving is a parallel self-help measure for researchers, to prevent further impact-loss now. Open access is a supplement to toll-access, but not necessarily a substitute for it.

One possible outcome is that the toll access and open access versions will peacefully co-exist in perpetuity, with all researchers using the toll-access versions of the research their own institutions can afford and the open-access versions of the rest. The more affordable the toll-access licenses, the less researchers will need to use the open-access versions.

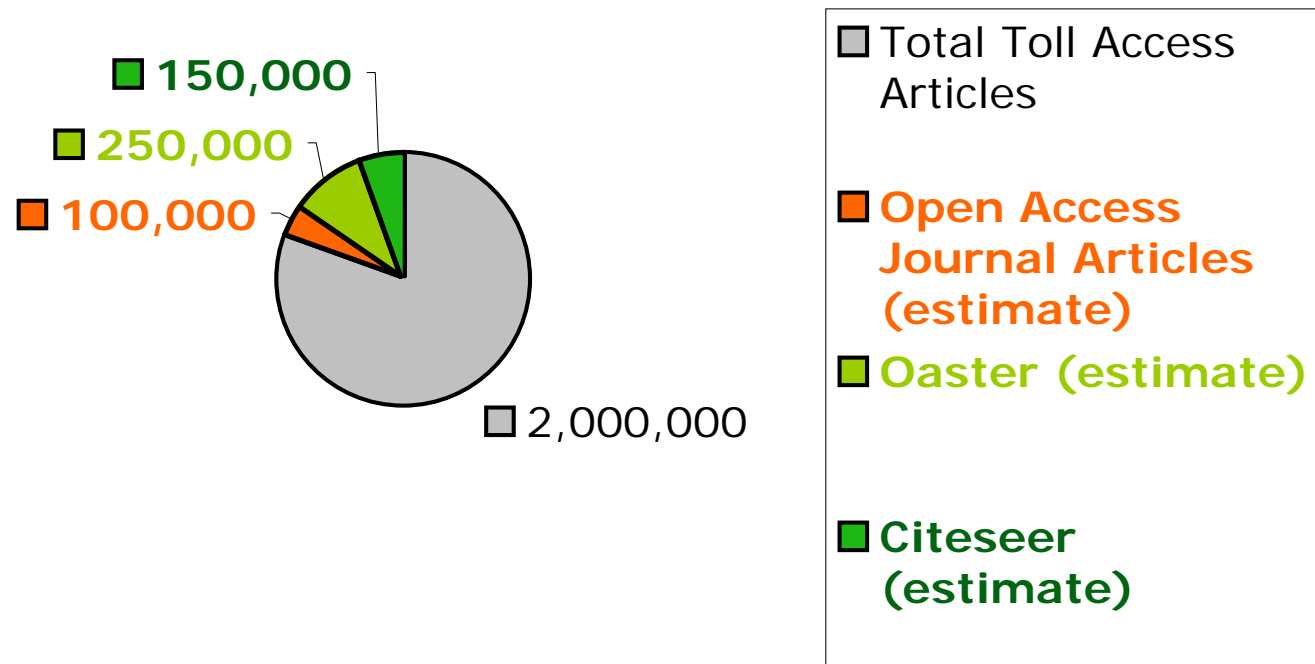
Even if the growth of the open-access versions is destined eventually to reduce the demand for the toll-access versions, that is a long way off, because self-archiving proceeds gradually and anarchically, and journals cannot be cancelled while only random parts of their contents are openly accessible.

If and when open accessibility does reduce the demand for the toll-access versions, this will at the same time be creating windfall savings for institutions on their periodical budgets -- savings which will then be available to institutions to pay for peer-review service provision up-front to those journals that are ready to convert to becoming open-access journals.

Proportion of Toll-Access and **Open-Access** *Journals* Today

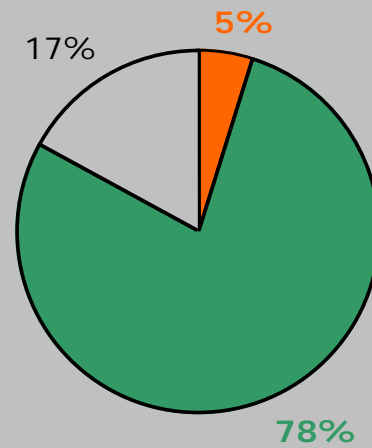


Proportion of Toll-Access and **Open-Access** Articles Today

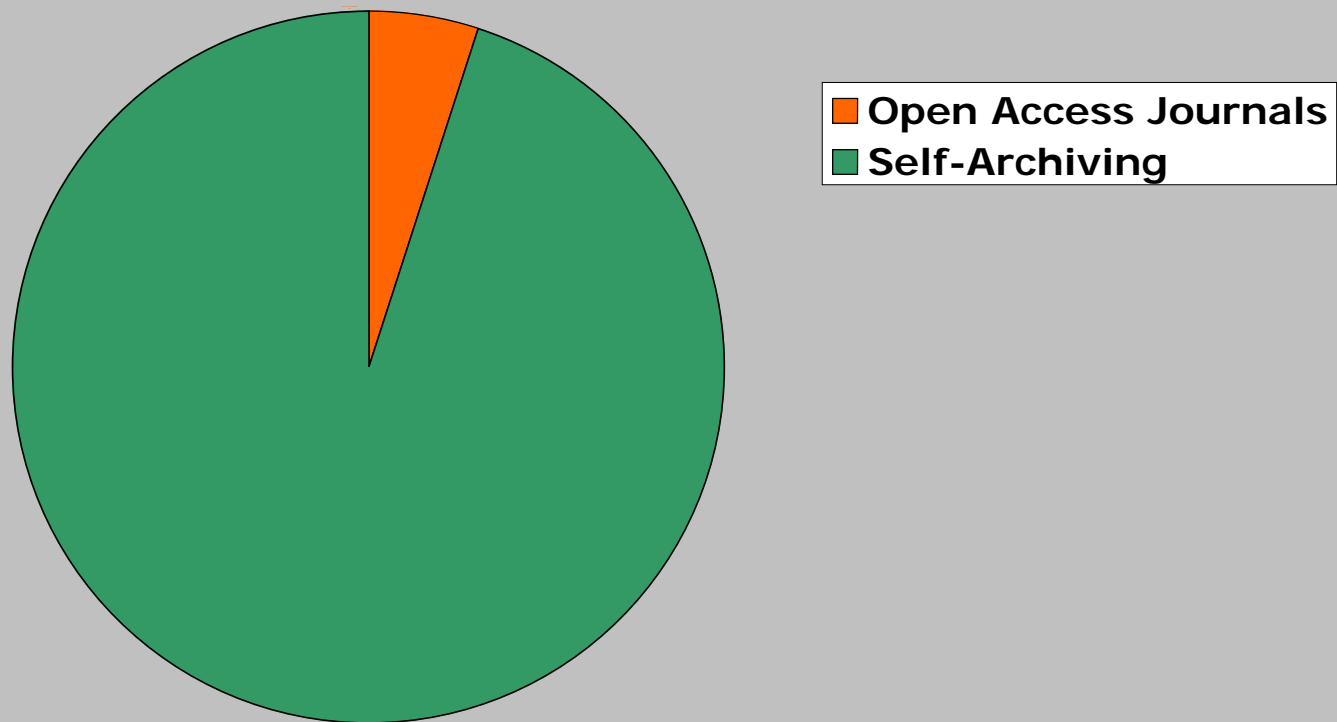


Romeo "Green/Gold" versus "Gray" Journals

- Journals already supporting self-archiving (gold)
- Journals already supporting self-archiving (green)
- Journals not yet supporting self-archiving (gray)



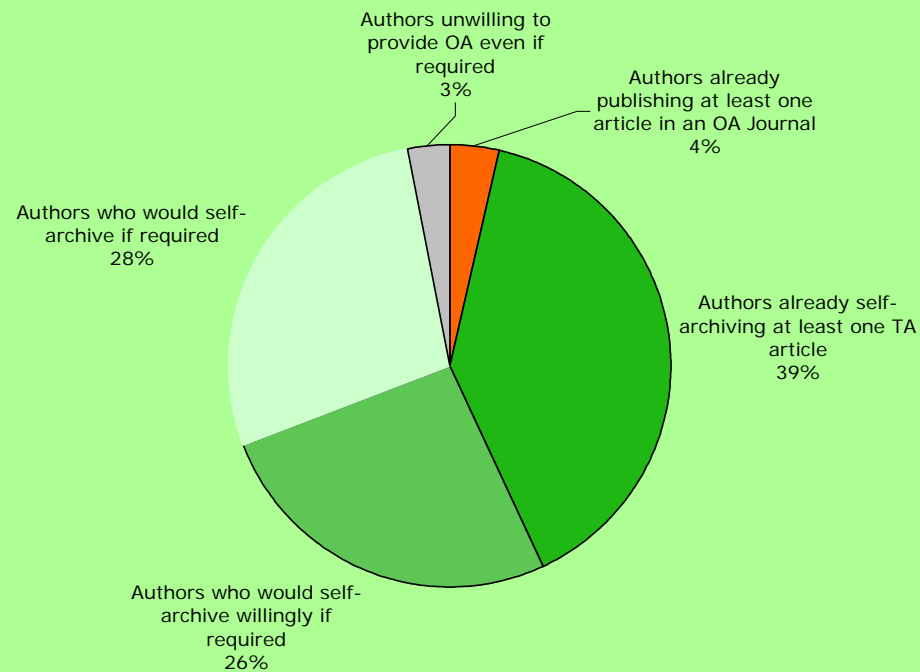
The 100% Solution for providing immediate Open Access Today

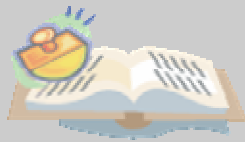


Swan & Brown (2004)

39% of authors self-archive
69% would self-archive willingly if required

Actual and potential proportions of Open Access Articles



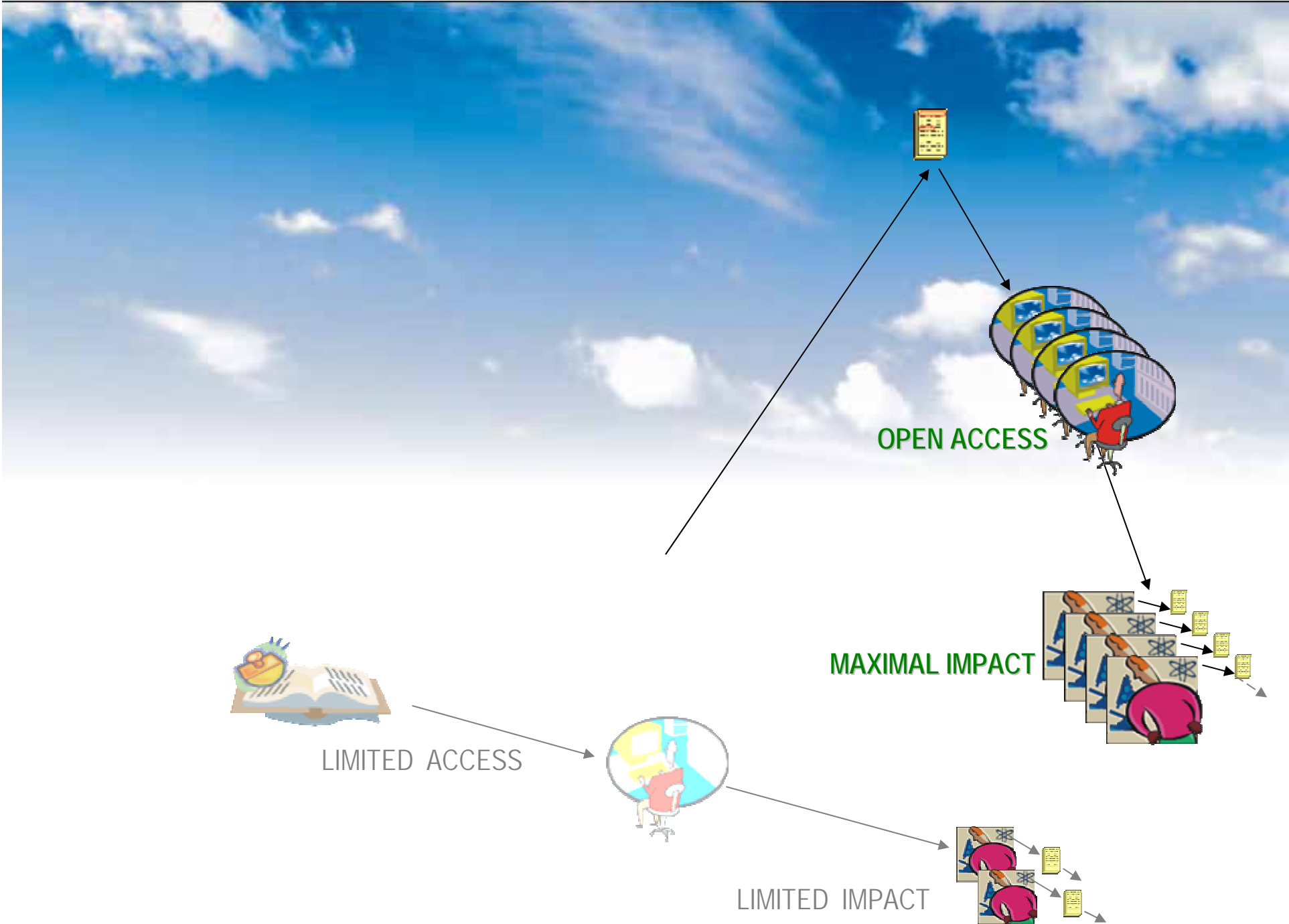


LIMITED ACCESS



LIMITED IMPACT





BOAI Self-Archiving FAQ <http://www.eprints.org/self-faq/>

What-is/why/how FAQs:

[What is self-archiving?](#)

[What is the Open Archives Initiative \(OAI\)?](#)

[What is OAI-compliance?](#)

[What is an Eprint Archive?](#)

[How can I or my institution create an Eprint Archive?](#)

[How can an institution facilitate the filling of its Eprint Archives?](#)

[What is the purpose of self-archiving?](#)

[What is the difference between distributed and central self-archiving?](#)

[What is the difference between institutional and central Eprint Archives?](#)

[Who should self-archive?](#)

[What is an Eprint?](#)

[Why should one self-archive?](#)

[What should be self-archived?](#)

[Is self-archiving publication?](#)

[What about copyright?](#)

[What if my copyright transfer agreement explicitly forbids self-archiving?](#)

[Peer-review reform: Why bother with peer review?](#)

[Is self-archiving legal?](#)

[What if the publisher forbids preprint self-archiving?](#)

What-to-do FAQs:

[What can researcher/authors do to facilitate self-archiving?](#)

[What can researchers' institutions do to facilitate self-archiving?](#)

[What can libraries do to facilitate self-archiving?](#)

[What can research funders do to facilitate self-archiving?](#)

[What can publishers do to facilitate self-archiving?](#)

"I-worry-about..." 32 FAQs (sub-grouped thematically)

I. 10. Copyright

32. Poisoned Apple

II. 7. Peer review

5. Certification

6. Evaluation

22. Tenure/Promotion

13. Censorship

III. 29. Sitting Pretty

4. Navigation (info-glut)

IV. 1. Preservation

2. Authentication

3. Corruption

23. Version control

25. Mark-up

26. Classification

16. Graphics

15. Readability

21. Serendipity

18. Libraries'/Librarians' future

V. 19. Learned Societies' future

VI. 17. Publishers' future

9. Downsizing

8. Paying the piper

14. Capitalism

24. Napster

31. Waiting for Gold

VII. 20. University conspiracy

30. Rechanneling toll-savings

28. Affordability

VIII. 12. Priority

27. Secrecy

IX. 11. Plagiarism

<http://www.ecs.soton.ac.uk/~harnad/intpub.html>

Harnad, S. (1990) Scholarly Skywriting and the Prepublication Continuum of Scientific Inquiry. *Psychological Science* 1: 342 - 343 (reprinted in *Current Contents* 45: 9-13, November 11 1991). <http://cogprints.soton.ac.uk/documents/disk0/00/00/15/81/>

Harnad, S. (1994) A Subversive Proposal. In: Ann Okerson & James O'Donnell (Eds.) *Scholarly Journals at the Crossroads: A Subversive Proposal for Electronic Publishing*. Washington, DC., Association of Research Libraries, June 1995. <http://www.arl.org/scomm/subversive/toc.html>

Harnad, S. (2001) For Whom the Gate Tolls? How and Why to Free the Refereed Research Literature Online Through Author/Institution Self-Archiving, Now. <http://cogprints.soton.ac.uk/documents/disk0/00/00/16/39/>

Harnad, S., Carr, L., Brody, T. & Oppenheim, C. (2003) Mandated online RAE CVs Linked to University Eprint Archives: Improving the UK Research Assessment Exercise whilst making it cheaper and easier. *Ariadne* 35 [http://www.ariadne.ac.uk/issue35_harnad/ /](http://www.ariadne.ac.uk/issue35_harnad/)

Harnad, S. (2003) Electronic Preprints and Postprints. *Encyclopedia of Library and Information Science* Marcel Dekker, Inc. <http://www.ecs.soton.ac.uk/~harnad/Temp/eprints.htm>

Harnad, S. (2003) Online Archives for Peer-Reviewed Journal Publications. *International Encyclopedia of Library and Information Science*. John Feather & Paul Sturges (eds). Routledge. <http://www.ecs.soton.ac.uk/~harnad/Temp/archives.htm>

OA advantage = EA + AA + QB + OA + UA + SA

1. **EA: Early Advantage:** Permanent citation increment for preprint (not just phase-shift advantage in timing)
2. **AA: Arxiv Advantage:** (Physics/math only) citation advantage for Arxiv even with 100% OA (astro, hep)
3. **QB: Quality Bias:** Higher-citation authors/papers self-archived more: self-selection bias
4. **OA: Open Access:** OA enhances citations 50%-400%+ (relative advantage only; disappears at 100% OA)
5. **UA: Usage Advantage:** OA enhances downloads 300%+ (absolute advantage; persists at 100%OA)
6. **SA: Selectivity Advantage:** At 100% OA, researchers do not cite more, but can use and cite the best and most relevant work (not just what their institutions can afford to access)