Guest lecture: Interdisciplinary Thinking module, Web Science MSc course
School of Electronics & Computer Science, University of Southampton, 8 February 2011

Open Access: how the case has been made

Alma Swan
Enabling Open Scholarship
And
Key Perspectives Ltd

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Open Access

- Free, immediate access to the entire research literature
- No restrictions on use
- No restrictions on re-purposing
- What are the implications of this for stakeholders?

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Progressing a radical idea that involved the Web

- Identify stakeholders (enactors, beneficiaries)
- Identify their interests
- Work out the messages
- Deliver them effectively (with evidence as well as passion)
- Do steps 3 and 4 again
- Do steps 3 and 4 again ...

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At the same time...

- Identify the stakeholders (disadvantaged, blockers)
- Identify their interests
- Hone your arguments (overall interest)

Arguments made

- On multiple fronts
- On multiple scales
- By multiple levels of proponent

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PESTLE

- Political
- Economic
- Societal
- Technical
- Legal
- Environmental

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Stakeholder 1: author community

- Had already worked in physics and computer sciences

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Open access to 656,246 e-prints in Physics, Mathematics, Computer Science, Quantitative Biology, Quantitative Finance and Statistics

Subject search and browse: Physics Search Form Interface Catchup

21 Jan 2010: Collaborative support plan announced
8 Apr 2009: Added public author identifiers, Facebook interaction, myarticles widget, and personal Atom feeds
See cumulative "What's New" pages. Read robots beware before attempting any automated download

Physics

- Astrophysics (**astro-ph** new, recent, find)
  includes: Cosmology and Extragalactic Astrophysics; Earth and Planetary Astrophysics; Galaxy Astrophysics; High Energy Astrophysical Phenomena; Instrumentation and Methods for Astrophysics; Solar and Stellar Astrophysics
- Condensed Matter (**cond-mat** new, recent, find)
  includes: Disordered Systems and Neural Networks; Materials Science; Mesoscale and Nanoscale Physics; Other Condensed Matter; Quantum Gases; Soft Condensed Matter; Statistical Mechanics; Strongly Correlated Electrons; Superconductivity
- General Relativity and Quantum Cosmology (**gr-qc** new, recent, find)
- High Energy Physics - Experiment (**hep-ex** new, recent, find)
- High Energy Physics - Lattice (**hep-lat** new, recent, find)
- High Energy Physics - Phenomenology (**hep-ph** new, recent, find)
- High Energy Physics - Theory (**hep-th** new, recent, find)
- Mathematical Physics (**math-ph** new, recent, find)
- Nuclear Experiment (**nucl-ex** new, recent, find)
- Nuclear Theory (**nucl-th** new, recent, find)
- Physics (**physics** new, recent, find)
  includes: Accelerator Physics; Atmospheric and Oceanic Physics; Atomic Physics; Atomic and Molecular Clusters; Biological Physics; Chemical Physics; Classical Physics; Computational Physics; Data Analysis, Statistics and Probability; Fluid Dynamics; General Physics; Geophysics; History and Philosophy of Physics; Instrumentation and Detectors; Medical Physics; Optics; Physics Education; Physics and Society; Plasma Physics; Popular Physics; Space Physics
- Quantum Physics (**quant-ph** new, recent, find)

Mathematics

- Mathematics (**math** new, recent, find)
  includes (see detailed description): Algebraic Geometry; Algebraic Topology; Analysis of PDEs; Category Theory; Classical Analysis and ODEs;

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Stakeholder 1: author community

- Had already worked in physics and computer sciences
- But other disciplines remained stubbornly disinterested
- What arguments could be made to persuade them?

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What sways an academic?

- Moral arguments
- Financial arguments
- Technological arguments
- Arguments that appeal to self-interest

Moral arguments

- Publicly funded research should be publicly available
- Knowledge is a public good and should not be in private hands
- The system is ineffective and penalises the less wealthy

“... all the completely obvious benefits do exist and it's just another industry squealing like a stuck pig because the internet is disrupting their cosy business model ...”

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Financial arguments

- Libraries can’t afford to buy knowledge

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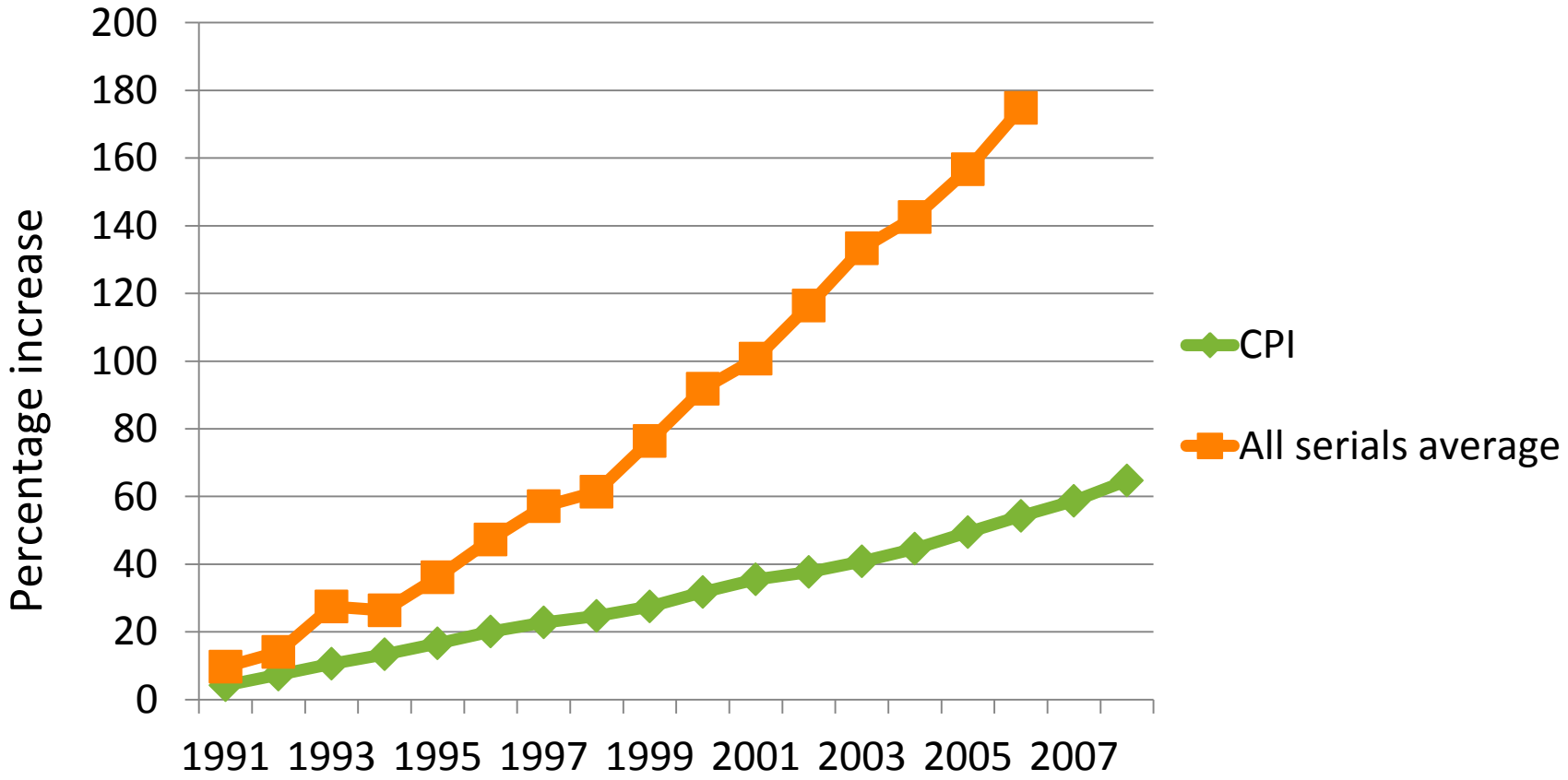
Unaffordable system



Data: Lee Van Orsdel; Bill Hooker; American Research Libraries

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Financial arguments

- Libraries can't afford to buy knowledge
- Journals can be extremely expensive, especially in the sciences

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The financial problem

- "Access is still a major concern for researchers" (Research Information Network, UK, 2009)
- WHO survey (2000)
  - 56% of research-based institutions in lower-income countries had NO current subscriptions to research journals
  - Nor had they for the previous 5 years
  - We will never close the "10/90 gap" unless we change the system

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Financial arguments

- Libraries can't afford to buy knowledge
- Journals are outrageously expensive
- An Open Access system will be cheaper and more effective

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“Pay walls ruin your ability to browse in areas tangential to your main research area. I often find references/abstracts to interesting articles via Google and then can't read them due to pay walls.”

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Self-interest-based arguments

- Visibility

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Professor Martin Skitmore

School of Urban Design, QUT

"There is no doubt in my mind that ePrints [his university repository] will have improved things – especially in developing countries such as Malaysia … many more access my papers who wouldn't have thought of contacting me personally in the 'old' days.

While this may … increase … citations, the most important thing … is that at least these people can find out more about what others have done…"

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Self-interest-based arguments

- Visibility
- Usage

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A well-filled repository

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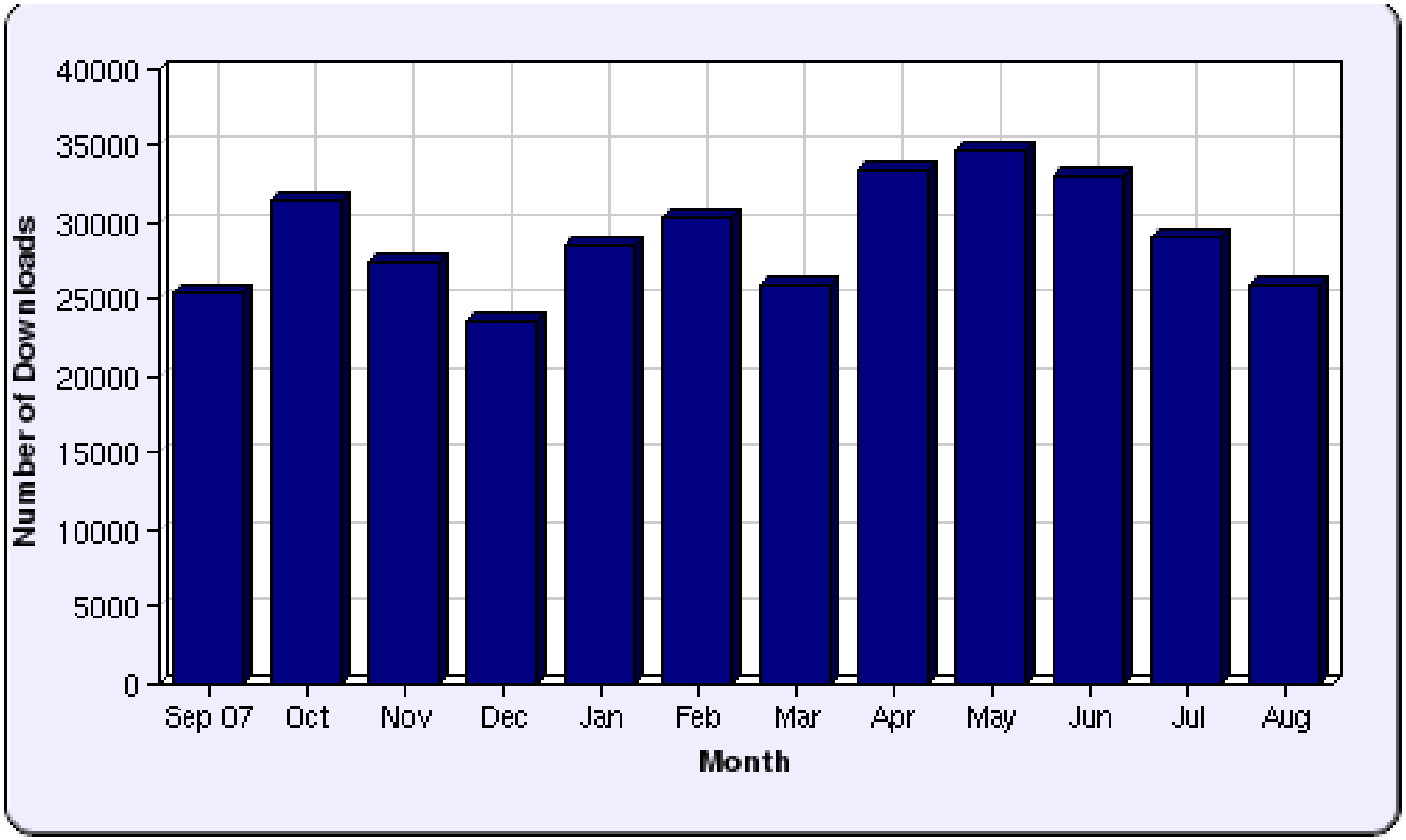
And it gets used



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University of Salford
A Greater Manchester University

3658 deposits to date

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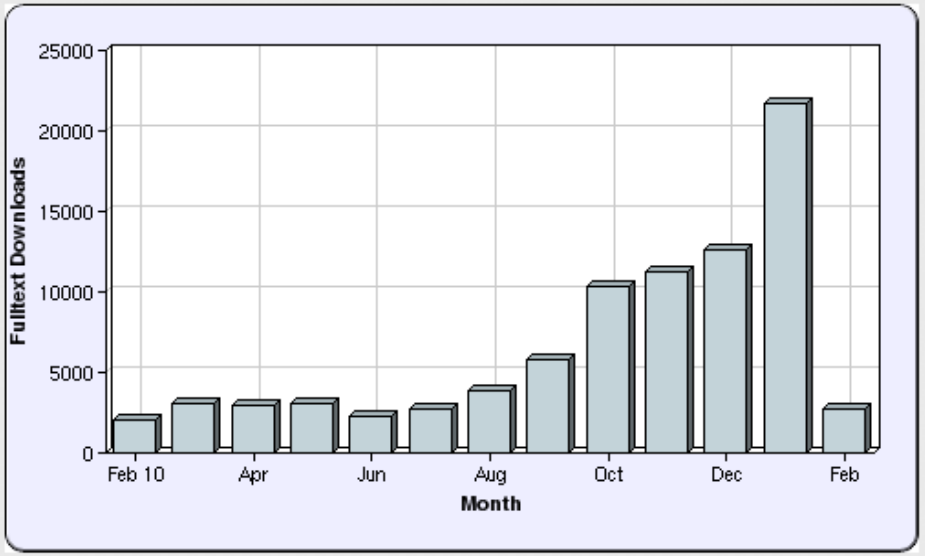
The chart below shows the total number of fulltext downloads from the repository over the last year.



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Self-interest-based arguments

- Visibility
- Usage
- Impact

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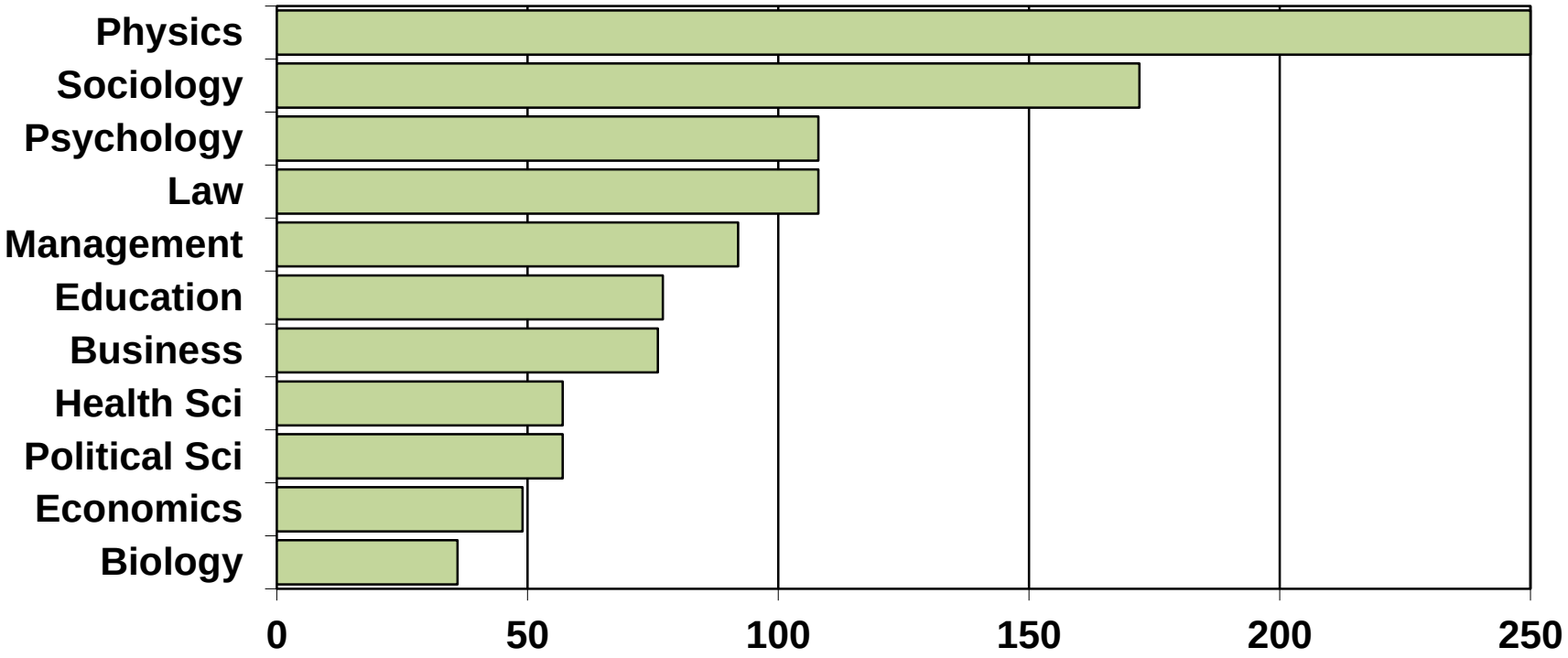
Impact



% increase in citations with Open Access

Range = 36%-200%

(Data: Stevan Harnad and co-workers)

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“[Institutional repository name] has helped to raise my research profile by showcasing my work and also increased my citation count.”

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Technology-based arguments

- It's the Web, stupid
- There are all sorts of technological tools and tricks to be used and enjoyed
- Collaborative, interdisciplinary and 'Big' research needs an Open Access, Open Web-based system of communication

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"... the free availability on the public internet, permitting any users to read, download, copy, distribute, print, search, or link to the full texts of these articles, crawl them for indexing, pass them as data to software ..."

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Technology-based developments

- Led by researchers
- Interoperability
- Repository technology
- Repository services
- Vision for a joined-up system

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What worked with researchers?

Argument	Success rating
Moral	
Financial	
Self-interest	
Technological	

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Stakeholder 2: Research funders

- Research funders are most often Government-funded bodies
- Some are private funders
- Some are private companies (and are not expected to subscribe to the concept of OA)

The arguments to funders

- Moral, financial, technical...
- Self-interest: there is better return on their investment in research if they require it to be Open Access
- Political: Open Access brings greater usage and impact
- Societal: Open Access benefits the wider society

Some significant successes

- Wellcome Trust: http://www.wellcome.ac.uk/About-us/Policy/Spotlight-issues/Open-access/index.htm
- UK's Research Councils (7 of them)
- US's National Institutes of Health
- Other national –level funders
- At continent level:
  - European Research Council
  - European Commission

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What worked with funders?

Argument	Success rating
Moral	
Financial	
Self-interest	
Technological	
Societal	
Managerial	

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Stakeholder 3: research-based institutions

- Moral, financial, technical, societal, political....
- Economic
- Managerial
- Philosophical

Economic arguments

- Open Access would be a cheaper research communication system for nations

National pictures

(Houghton et al, 2009, 2010)

Annual € savings from moving to:	UK	Netherlands	Denmark	US federal agencies
OA journals ('Gold' OA)	480 million	133 million	70 million	Value of benefit over 30 years amounts to some $1 billion, 6 times the cost of archiving the material
OA repositories with subscriptions ('Green' OA)	125 million	50 million	30 million	
OA repositories with overlay services	Circa 480 million	Circa 133 million	Circa 70 million	

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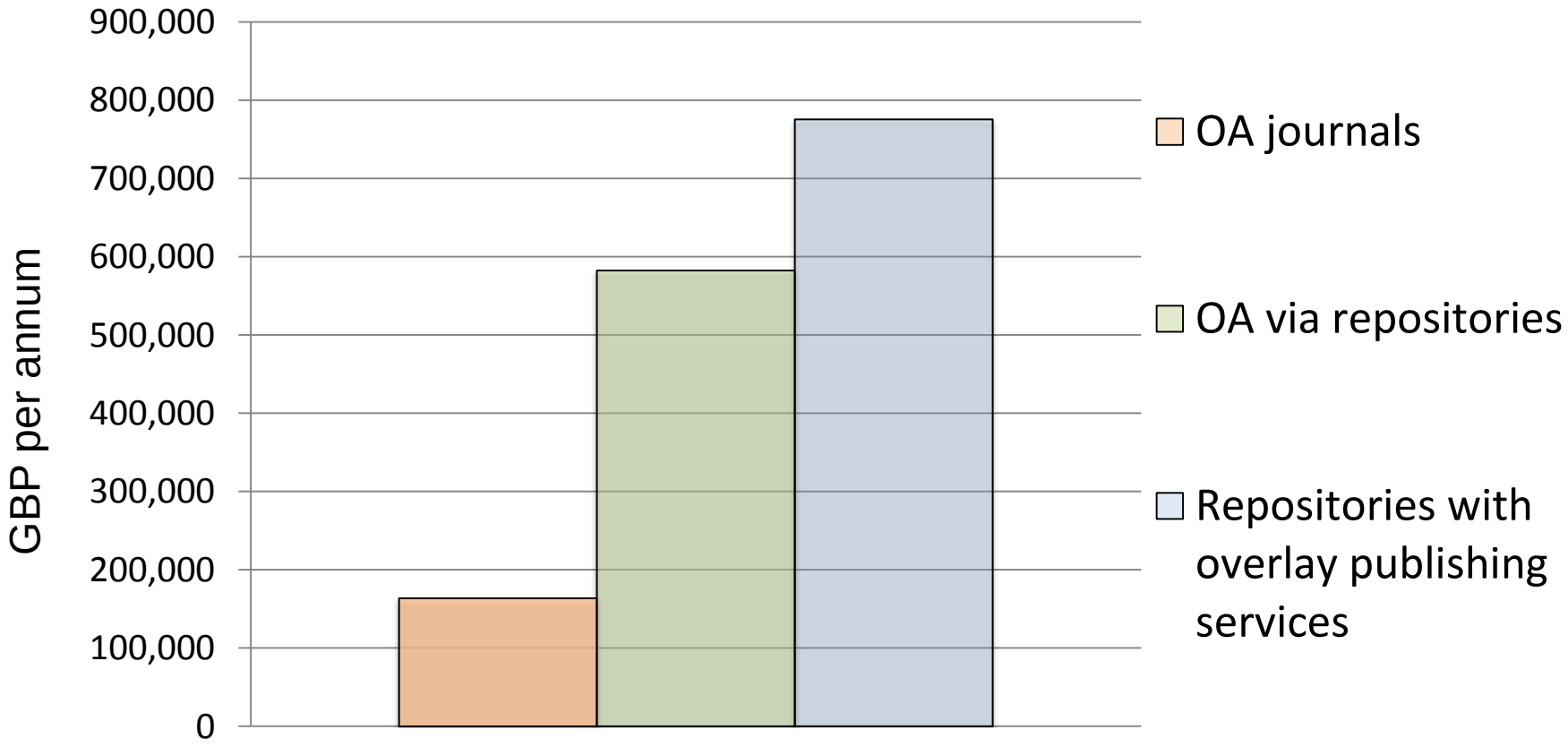
Economic arguments

- Open Access would be a cheaper research communication system for nations
- Open Access would be cheaper for most universities

University UK: Annual savings from OA



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Economic arguments

- Open Access would be a cheaper research communication system for nations
- Open Access would be cheaper for most universities
- Open Access would better support:
  - innovative industries
  - professional communities
  - practitioner communities

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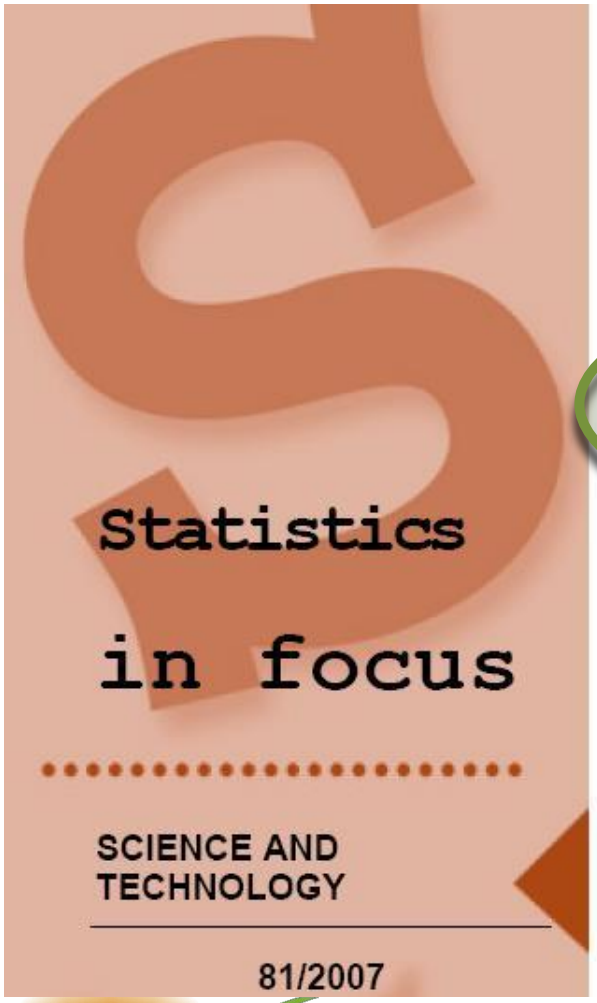
EU CIS studies



Community Innovation

Statistics

Weak link between innovative enterprises and public research institutes/universities

This report puts the spotlight on two different facets of innovation among those screened by the Fourth Community Innovation Survey (CIS 4): the sources of information that are highly important for innovation, and the types of partners with which innovative enterprises cooperate.

The outcome for both aspects is similar: the link between publicly financed science and innovative industry is rather weak. Institutional sources are less frequently consulted than internal or market sources; and innovative enterprises find cooperation partners more easily among suppliers or customers than in universities or public research institutes.

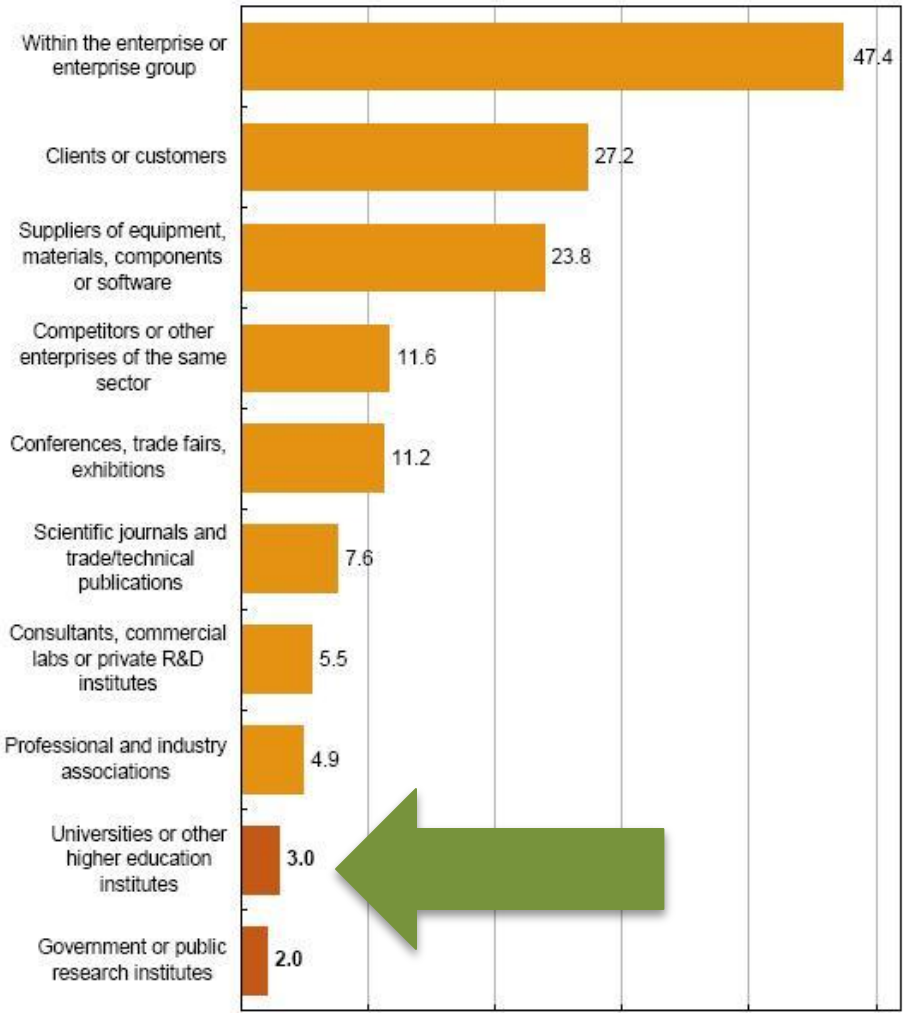
Author

Sergiu-Valentin PARVAN

Contents

eurostat

Figure 1: Sources of information identified by enterprises as highly important for the enterprise's innovation activities, as a percentage of innovative enterprises, EU-27 average



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Managerial arguments

- Fulfils a university's mission to engender, encourage and disseminate scholarly work
- An institution can mandate self-archiving across all subject areas
- Enables a university to compile a complete record of its intellectual effort
- Forms a permanent record of all digital output from an institution
- Enables standardised online CVs for all researchers (e.g. REF exercise)
- 'Marketing' tool for universities

"I am asked how many articles my researchers publish each year, and I have to say 'I have no idea!'"

(Professor Bernard Rentier, Rector, University of Liege, Belgium, explaining one of the reasons why he has built an institutional Open Access repository and introduced a mandatory policy on Open Access)

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Philosophical arguments

- The mission of a (publicly funded) university is to create and disseminate knowledge
- A university has a duty to serve the wider society that pays for it

“The case for Open Access within a university is not simply political or economic or professional. It needs to rest in the notion of what a university is and what it should be .... It is central to the university’s position in the public space”

Professor Martin Hall, Vice Chancellor of the University of Salford

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What worked with institutions?

Argument	Success rating
Moral	
Financial	
Self-interest	
Technological	
Societal	
Managerial	
Economic	
Philosophical	

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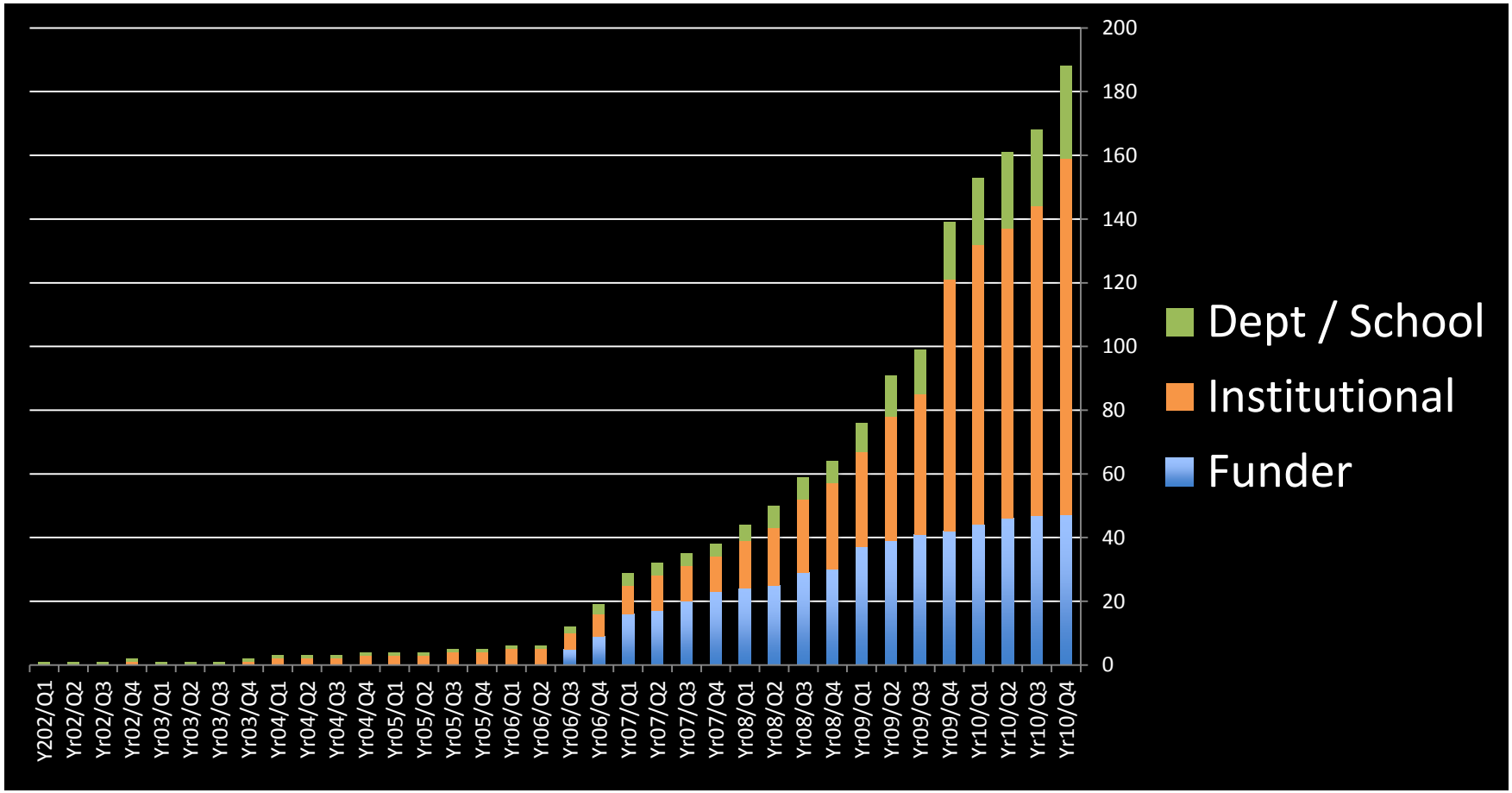
Mandatory policies on OA



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The agenda is widening

- Open Data
- Advantages:
  - Re-use by humans
  - Re-use by machines
  - A true semantic Web
- http://www.ted.com/index.php/talks/hans_rosling_shows_the_best_stats_you_ve_ever_seen.html

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Alma Swan

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To sum up

	Authors	Funders	Institutions
Moral	★★	★★★★	★★★
Financial	★	★★★★	★★★★
Self-interest	★★★	★	★★★★★
Technological	★★★★★	★★★★	★★
Societal		★★	★★★★
Managerial		★★★★	★★★★
Philosophical		★	★★★★

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