Why metrics can (and should?) be applied

in the Social Sciences

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Quick Intro: Anne-Wil Harzing

- My name?...., Yes Anne-Wil is one name and not part of my family name
- Started at Middlesex in July 2014
  - previously University of Melbourne (PhD director 2004-2009, Associate Dean RHD, 2009-2010, Associate Dean Research, 2010-2013)
  - 1991-2001: Bradford (UK), Maastricht, Tilburg & Heerlen (Netherlands)
- Active researcher & research mentor
  - 81 international journal articles since 1995 (160+ publications in total)
  - >12,500 Google Scholar citations, h-index 51, ISI citations: >4,700, top 1% most cited world-wide in Economics & Business
  - Active blog on all things academia, incl. *Academia Behind the Scenes* and *Academic Etiquette* and *Publish or Perish tips*, http://www.harzing.com/blog/.toc
- Service to the academic community
  - Editorial board membership of a dozen journals
  - Personal website online since 1999, 1000-1500 visitors/day, many free resources
    - Journal Quality List since 2000, 59th edition
    - **Publish or Perish since 2006, version 5 launched late October 2016**

Metrics vs. peer review: an increasing audit culture

- Increasing "audit culture" in academia, where universities, departments and individuals are constantly monitored and ranked
  - National research assessment exercises, such as the ERA (Australia) and the REF (UK), are becoming increasingly important
- Publications in these national exercises are normally assessed by peer review for Social Sciences and Humanities
  - Citations metrics are now used in the Life Sciences, Sciences and Engineering as additional input for decision-making
  - The argument for not using citation metrics in SSH is that coverage for these disciplines is deemed insufficient in WoS and Scopus

What is the danger of peer review? (1)

- Peer review might lead to harsher verdicts than bibliometric evidence
  - especially for disciplines that do not have unified paradigms, such as the Social Sciences and Humanities
- In Australia (ERA 2010) the average rating for the Social Sciences was only about 60% of that of the Sciences and Life Sciences
  - This is despite the fact that on a citations per paper basis Australia's worldwide rank is similar in all disciplines
- The low ERA-ranking led to widespread popular commentary that government funding for the Social Sciences should be reduced or removed altogether
  - Similarly negative assessment of the credibility of SSH can be found in the UK (and no doubt in many other countries)

What is the danger of peer review? (2)

- More generally, peer review might lead to what I have called "promise over proof"
  - Harzing, A.W.; Mijnhardt, W. (2015) **Proof over promise: Towards a more inclusive ranking of Dutch academics in Economics & Business**, *Scientometrics*, vol. 102, no. 1, pp. 727-749
- Assessment of the quality of a publication might be (subconsciously) influenced by the "promise" of:
  - the journal in which it is published,
  - the reputation of the author's affiliation,
  - the sub-discipline (theoretical/modeling vs. applied, hard vs. soft),
  - (or even) the gender and ethnicity of the author
- Promise vs. proof: 4 vs. 1000?
  - **[Promise]** Publication in a "triple-A" or "4* journal" initially means that **3-4 academics** thought your paper was a worthwhile contribution to the field. But what if this paper is hardly ever cited?
  - **[Proof]** Publication in a "C-journal" or "1* journal" with 1,000+ citations means that **1,000 academics** thought your paper was a worthwhile contribution to the field

What can we do?

- Be critical about the increasing audit culture
  - But: be realistic, we are unlikely to see a reversal of this trend. Hence in order to "emancipate" the Social Sciences and Humanities, an inclusion of citation metrics might help
- Raise awareness about
  - Alternative data sources for citation analysis that are more inclusive (e.g. including books, local and regional journals, reports, working papers)
  - Difficulty of comparing metrics across disciplines because of different publication and citation practices
    - (Life) Science academics in particular write more (and shorter) papers with more authors; 10-15 authors not unusual, some >1000 authors
- Investigate alternative data sources and metrics
  - Google Scholar, Microsoft Academic, or even Scopus instead of WoS/ISI
  - hIa (Individual annualised h-index), i.e. h-index corrected for career length and number of co-authors
    - measures the average number of single-author equivalent impactful publications an academic publishes a year (usually well below 1.0)

Investigate alternative data sources and metrics

- Need **comprehensive** empirical work to assess alternatives
- Dozens of studies compared two or even three databases. However they:
  - Focused on a single or small groups of journals or a small group of academics
  - Only covered a small number of disciplines
  - Typically focused on one or two metrics
- Hence our study provides:
  - Cross-disciplinary comparison across **all major disciplinary** areas
  - Comparison of **4 different metrics**:
    - publications, citations, h-index
    - hI,annual (h-index corrected for career length and number of co-authors)

The bibliometric study (1): The basics

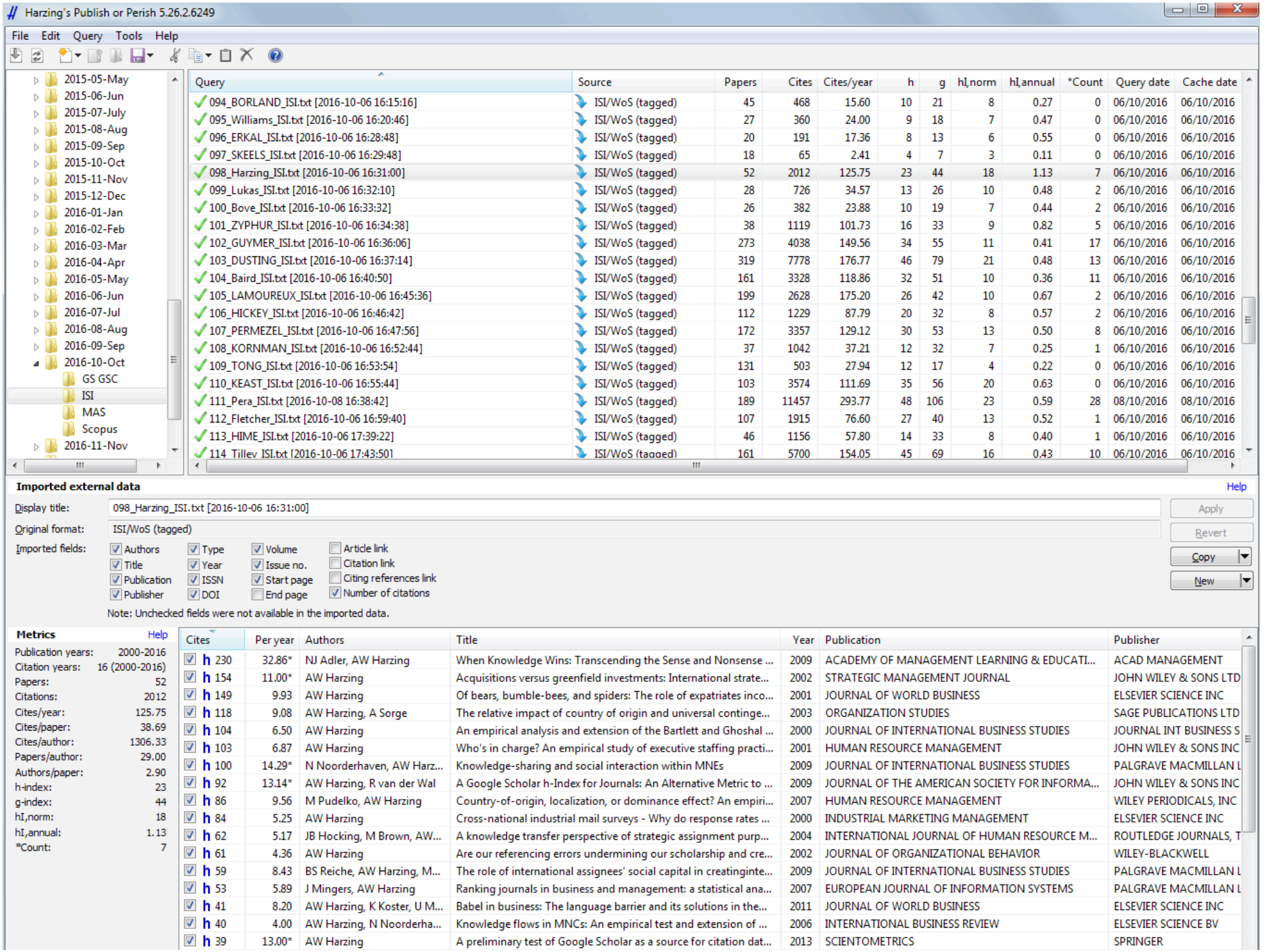
- Sample of 146 Associate and Full Professors at the University of Melbourne
  - All main disciplines (Humanities, Social Sciences, Engineering, Sciences, Life Sciences) were represented, 37 sub-disciplines
  - Two full professors (1 male, 1 female) and two associate professors (1 male, 1 female) in each sub-discipline (e.g. management, marketing, accounting, economics)
- Citation metrics in WoS/ISI, Scopus and Google Scholar
  - Collected citation data every 3 months for 2 years
  - Google Scholar data collected with Publish or Perish (http://www.harzing.com/resources/publish-or-perish)
  - WoS/ISI and Scopus collected in the respective databases and imported into Publish or Perish to calculate metrics
- The overall conclusion: with appropriate metrics and data sources, citation metrics **can** be applied in the Social Sciences
  - **ISI H-index**: Life Sciences mean **200% above** Social Sciences mean
  - **GS hIa index**: Life Sciences mean **1.5% below** Social Sciences mean

The bibliometric study (2): Details on the sample

- Sample: 37 disciplines were subsequently grouped into five major disciplinary fields:
  - **Humanities**: Architecture, Building & Planning; Culture & Communication, History; Languages & Linguistics, Law (19 observations),
  - **Social Sciences**: Accounting & Finance; Economics; Education; Management & Marketing; Psychology; Social & Political Sciences (24 observations),
  - **Engineering**: Chemical & Biomolecular Engineering; Computing & Information Systems; Electrical & Electronic Engineering, Infrastructure Engineering, Mechanical Engineering (20 observations),
  - **Sciences**: Botany; Chemistry, Earth Sciences; Genetics; Land & Environment; Mathematics; Optometry; Physics; Veterinary Sciences; Zoology (44 observations),
  - **Life Sciences**: Anatomy & Neurosciece; Audiology; Biochemistry & Molecular Biology; Dentistry; Obstetrics & Gynaecology; Ophthalmology; Microbiology; Pathology; Physiology; Population Health (39 observations).

The bibliometric study (3): Descriptive statistics

	N	Minimum	Maximum	Mean	Std. Deviation
WoS Years active	**146**	**3**	**47**	**23.84**	**9.016**
Scopus Years active	**146**	**5**	**46**	**23.69**	**8.969**
GS Years active	**146**	**8**	**46**	**25.64**	**8.086**
WoS Total # of papers	**146**	**3**	**309**	**77.25**	**64.346**
Scopus Total # of papers	**146**	**3**	**309**	**86.37**	**68.304**
GS Total # of papers	**146**	**22**	**519**	**147.46**	**97.799**
WoS Total # of citations	**146**	**0**	**11287**	**1871.68**	**2238.092**
Scopus Total # of citations	**146**	**0**	**11740**	**1978.27**	**2179.222**
GS Total # of citations	**146**	**58**	**16507**	**3290.88**	**3122.853**
WoS h-index	**146**	**0**	**54**	**18.91**	**13.188**
Scopus h-index	**146**	**0**	**48**	**16.92**	**10.920**
GS h-index	**146**	**3**	**65**	**26.06**	**13.185**
WoS hIa index	**146**	**.00**	**1.07**	**.3623**	**.18991**
Scopus hIa index	**146**	**.00**	**1.11**	**.4075**	**.19075**
GS hIa index	**146**	**.05**	**1.75**	**.5757**	**.26238**
Valid N (listwise)	**146**				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094_BORLAND_ISI.txt [2016-10-06 16:15:16] | ISI/WoS (tagged) | 45 | 468 | 15.60 | 10 | 21 | 8 | 0.27 | 0 | 06/10/2016 | 06/10/2016
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096_ERKAL_ISI.txt [2016-10-06 16:28:48] | ISI/WoS (tagged) | 20 | 191 | 17.36 | 8 | 13 | 6 | 0.55 | 0 | 06/10/2016 | 06/10/2016
097_SKEELS_ISI.txt [2016-10-06 16:29:48] | ISI/WoS (tagged) | 18 | 65 | 2.41 | 4 | 7 | 3 | 0.11 | 0 | 06/10/2016 | 06/10/2016
098_Harzing_ISI.txt [2016-10-06 16:31:00] | ISI/WoS (tagged) | 52 | 2012 | 125.75 | 23 | 44 | 18 | 1.13 | 7 | 06/10/2016 | 06/10/2016
099_Lukas_ISI.txt [2016-10-06 16:32:10] | ISI/WoS (tagged) | 28 | 726 | 34.57 | 13 | 26 | 10 | 0.48 | 2 | 06/10/2016 | 06/10/2016
100_Bove_ISI.txt [2016-10-06 16:33:32] | ISI/WoS (tagged) | 26 | 382 | 23.88 | 10 | 19 | 7 | 0.44 | 2 | 06/10/2016 | 06/10/2016
101_ZYPHUR_ISI.txt [2016-10-06 16:34:38] | ISI/WoS (tagged) | 38 | 1119 | 101.73 | 16 | 33 | 9 | 0.82 | 5 | 06/10/2016 | 06/10/2016
102_GUYMER_ISI.txt [2016-10-06 16:36:06] | ISI/WoS (tagged) | 273 | 4038 | 149.56 | 34 | 55 | 11 | 0.41 | 17 | 06/10/2016 | 06/10/2016
103_DUSTING_ISI.txt [2016-10-06 16:37:14] | ISI/WoS (tagged) | 319 | 7778 | 176.77 | 46 | 79 | 21 | 0.48 | 13 | 06/10/2016 | 06/10/2016
104_Baird_ISI.txt [2016-10-06 16:40:50] | ISI/WoS (tagged) | 161 | 3328 | 118.86 | 32 | 51 | 10 | 0.36 | 11 | 06/10/2016 | 06/10/2016
105_LAMOUREUX_ISI.txt [2016-10-06 16:45:36] | ISI/WoS (tagged) | 199 | 2628 | 175.20 | 26 | 42 | 10 | 0.67 | 2 | 06/10/2016 | 06/10/2016
106_HICKEY_ISI.txt [2016-10-06 16:46:42] | ISI/WoS (tagged) | 112 | 1229 | 87.79 | 20 | 32 | 8 | 0.57 | 2 | 06/10/2016 | 06/10/2016
107_PERMEZEL_ISI.txt [2016-10-06 16:47:56] | ISI/WoS (tagged) | 172 | 3357 | 129.12 | 30 | 53 | 13 | 0.50 | 8 | 06/10/2016 | 06/10/2016
108_KORNMAN_ISI.txt [2016-10-06 16:52:44] | ISI/WoS (tagged) | 37 | 1042 | 37.21 | 12 | 32 | 7 | 0.25 | 1 | 06/10/2016 | 06/10/2016
109_TONG_ISI.txt [2016-10-06 16:53:54] | ISI/WoS (tagged) | 131 | 503 | 27.94 | 12 | 17 | 4 | 0.22 | 0 | 06/10/2016 | 06/10/2016
110_KEAST_ISI.txt [2016-10-06 16:55:44] | ISI/WoS (tagged) | 103 | 3574 | 111.69 | 35 | 56 | 20 | 0.63 | 0 | 06/10/2016 | 06/10/2016
111_Pera_ISI.txt [2016-10-08 16:38:42] | ISI/WoS (tagged) | 189 | 11457 | 293.77 | 48 | 106 | 23 | 0.59 | 28 | 08/10/2016 | 08/10/2016
112_Fletcher_ISI.txt [2016-10-06 16:59:40] | ISI/WoS (tagged) | 107 | 1915 | 76.60 | 27 | 40 | 13 | 0.52 | 1 | 06/10/2016 | 06/10/2016
113_HIME_ISI.txt [2016-10-06 17:39:22] | ISI/WoS (tagged) | 46 | 1156 | 57.80 | 14 | 33 | 8 | 0.40 | 1 | 06/10/2016 | 06/10/2016
114_Tillev_ISI.txt [2016-10-06 17:43:50] | ISI/WoS (tagged) | 161 | 5700 | 154.05 | 45 | 69 | 16 | 0.43 | 10 | 06/10/2016 | 06/10/2016
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Cites/paper: 38.69
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Papers/author: 29.00
Authors/paper: 2.90
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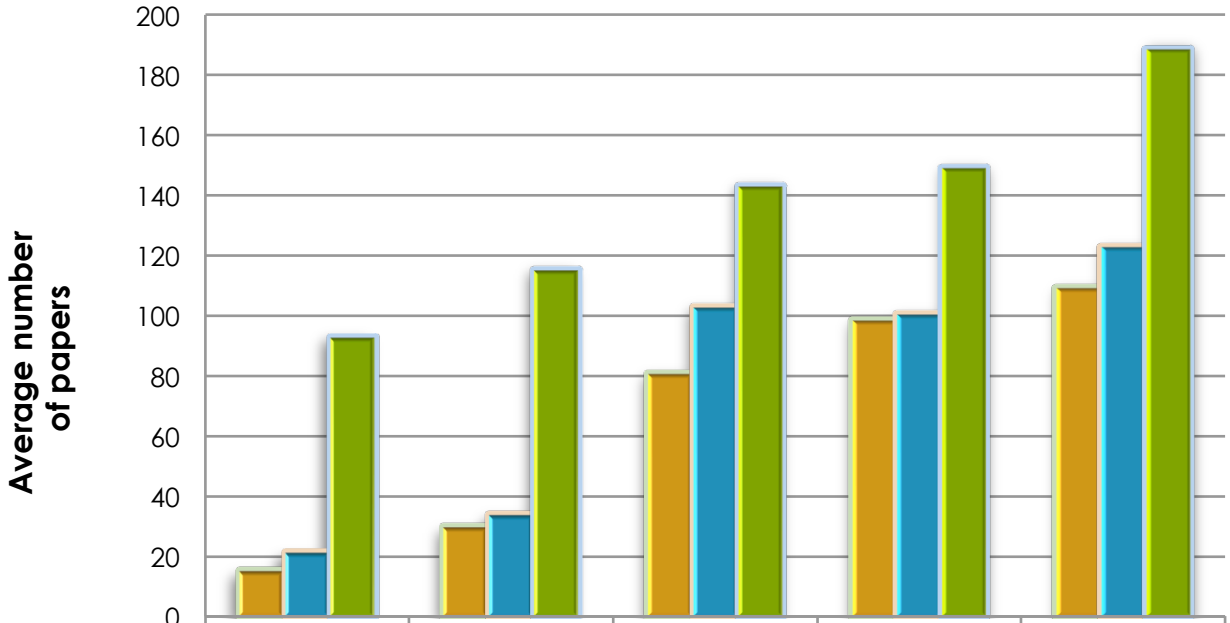
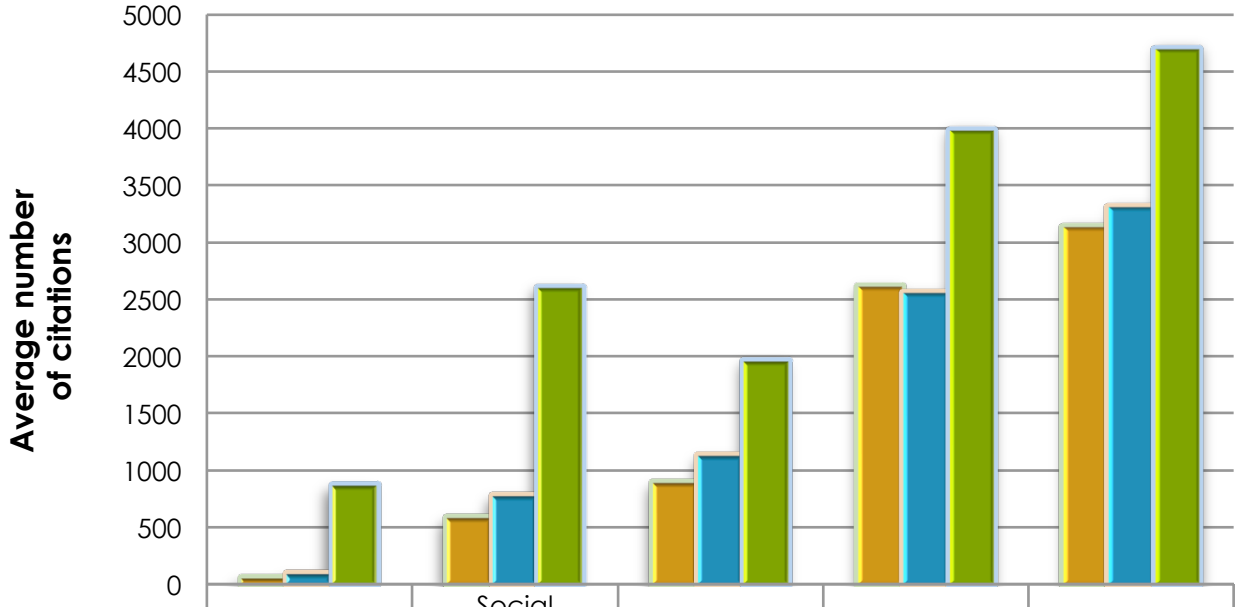
g-index: 44
hI,norm: 18
hI,annual: 1.13
*Count: 7
Cites | Per year | Authors | Title | Year | Publication | Publisher
h 230 | 32.86* | NJ Adler, AW Harzing | When Knowledge Wins: Transcending the Sense and Nonsense ... | 2009 | ACADEMY OF MANAGEMENT LEARNING & EDUCATI... | ACAD MANAGEMENT
h 154 | 11.00* | AW Harzing | Acquisitions versus greenfield investments: International strate... | 2002 | STRATEGIC MANAGEMENT JOURNAL | JOHN WILEY & SONS LTD
h 149 | 9.93 | AW Harzing | Of bears, bumble-bees, and spiders: The role of expatriates inco... | 2001 | JOURNAL OF WORLD BUSINESS | ELSEVIER SCIENCE INC
h 118 | 9.08 | AW Harzing, A Sorge | The relative impact of country of origin and universal continge... | 2003 | ORGANIZATION STUDIES | SAGE PUBLICATIONS LTD
h 104 | 6.50 | AW Harzing | An empirical analysis and extension of the Bartlett and Ghoshal ... | 2000 | JOURNAL OF INTERNATIONAL BUSINESS STUDIES | JOURNAL INT BUSINESS S
h 103 | 6.87 | AW Harzing | Who's in charge? An empirical study of executive staffing practi... | 2001 | HUMAN RESOURCE MANAGEMENT | JOHN WILEY & SONS INC
h 100 | 14.29* | N Noorderhaven, AW Harz... | Knowledge-sharing and social interaction within MNEs | 2009 | JOURNAL OF INTERNATIONAL BUSINESS STUDIES | PALGRAVE MACMILLAN L
h 92 | 13.14* | AW Harzing, R van der Wal | A Google Scholar h-Index for Journals: An Alternative Metric to ... | 2009 | JOURNAL OF THE AMERICAN SOCIETY FOR INFORMA... | JOHN WILEY & SONS INC
h 86 | 9.56 | M Pudelko, AW Harzing | Country-of-origin, localization, or dominance effect? An empiri... | 2007 | HUMAN RESOURCE MANAGEMENT | WILEY PERIODICALS, INC
h 84 | 5.25 | AW Harzing | Cross-national industrial mail surveys - Why do response rates ... | 2000 | INDUSTRIAL MARKETING MANAGEMENT | ELSEVIER SCIENCE INC
h 62 | 5.17 | JB Hocking, M Brown, AW... | A knowledge transfer perspective of strategic assignment purp... | 2004 | INTERNATIONAL JOURNAL OF HUMAN RESOURCE M... | ROUTLEDGE JOURNALS, T
h 61 | 4.36 | AW Harzing | Are our referencing errors undermining our scholarship and cre... | 2002 | JOURNAL OF ORGANIZATIONAL BEHAVIOR | WILEY-BLACKWELL
h 59 | 8.43 | BS Reiche, AW Harzing, M... | The role of international assignees' social capital in creatinginte... | 2009 | JOURNAL OF INTERNATIONAL BUSINESS STUDIES | PALGRAVE MACMILLAN L
h 53 | 5.89 | J Mingers, AW Harzing | Ranking journals in business and management: a statistical ana... | 2007 | EUROPEAN JOURNAL OF INFORMATION SYSTEMS | PALGRAVE MACMILLAN L
h 41 | 8.20 | AW Harzing, K Koster, U M... | Babel in business: The language barrier and its solutions in the... | 2011 | JOURNAL OF WORLD BUSINESS | ELSEVIER SCIENCE INC
h 40 | 4.00 | AW Harzing, N Noorderha... | Knowledge flows in MNCs: An empirical test and extension of ... | 2006 | INTERNATIONAL BUSINESS REVIEW | ELSEVIER SCIENCE BV
h 39 | 13.00* | AW Harzing | A preliminary test of Google Scholar as a source for citation dat... | 2013 | SCIENTOMETRICS | SPRINGER

Different data-sources across disciplines: # of papers



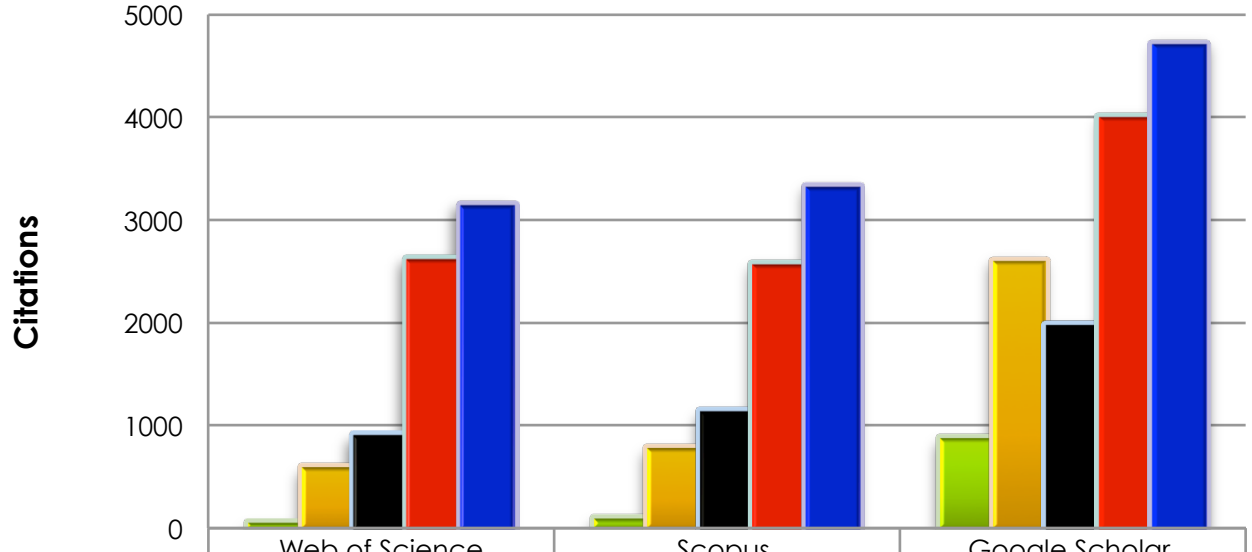
	Humanities	Social Sciences	Engineering	Sciences	Life Sciences
Web of Science	16	30	81	98	109
Scopus	21	34	103	101	123
Google Scholar	93	115	143	149	189

Different data-sources across disciplines: # of citations



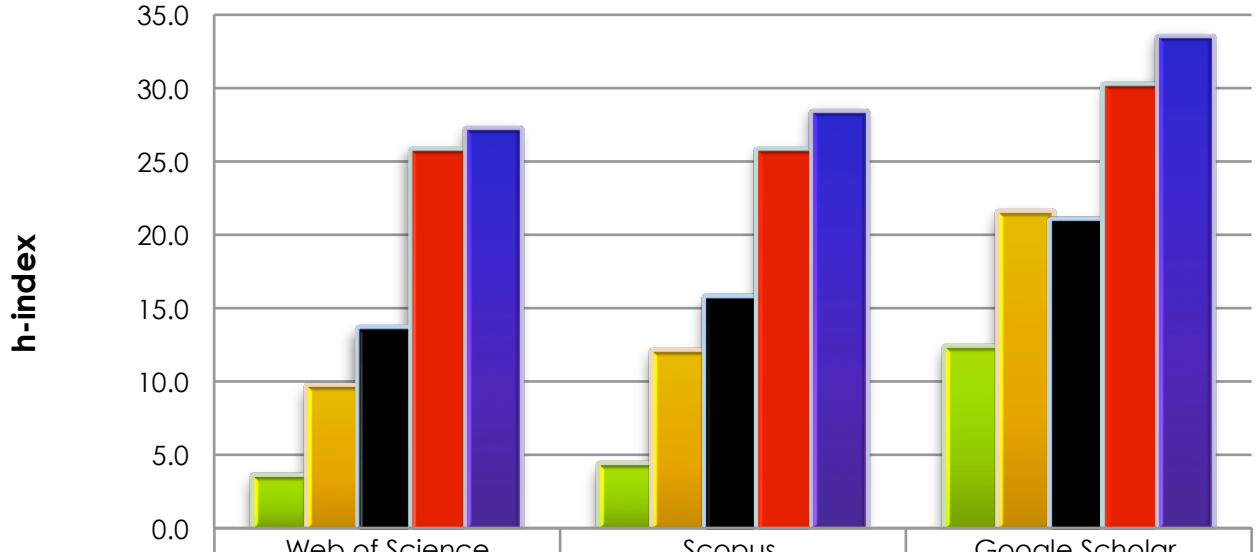
	Humanities	Social Sciences	Engineering	Sciences	Life Sciences
Web of Science	61	591	897	2612	3139
Scopus	100	782	1132	2558	3313
Google Scholar	871	2604	1964	3984	4699

Different data-sources across disciplines: # of citations



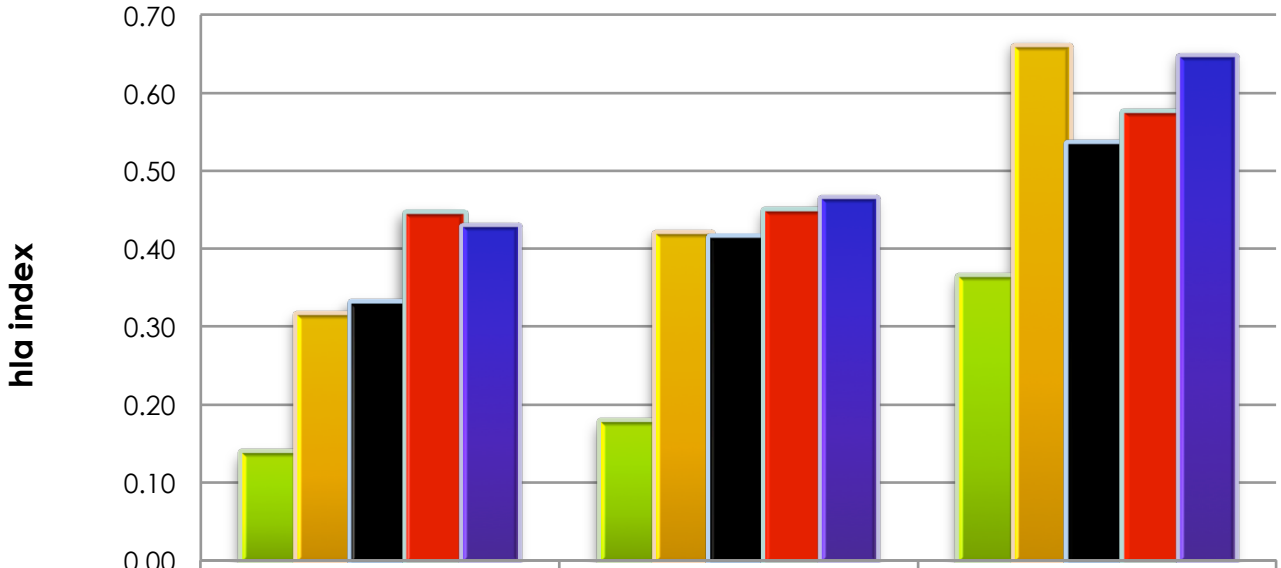
	Web of Science	Scopus	Google Scholar
Humanities	61	100	871
Social Sciences	591	782	2604
Engineering	897	1132	1964
Sciences	2612	2558	3984
Life Sciences	3139	3313	4699

Different data-sources across disciplines: h-index



	Web of Science	Scopus	Google Scholar
Humanities	3.5	4.3	12.3
Social Sciences	9.6	12.0	21.5
Engineering	13.5	15.6	20.8
Sciences	25.6	25.6	30.1
Life Sciences	27.1	28.3	33.4

Different data-sources across disciplines: hla index



	Web of Science	Scopus	Google Scholar
Humanities	0.14	0.18	0.36
Social Sciences	0.32	0.42	0.66
Engineering	0.33	0.41	0.53
Sciences	0.44	0.45	0.57
Life Sciences	0.43	0.46	0.65

hla: h-index corrected for academic age (to accommodate differences in career length) and number of co-authors (to remove discipline bias)

Comparing WoS h-index with Scopus or GS hIa

Discipline	Web of Science h-index	Life Sciences = 100	Scopus hIa	Life Sciences = 100	Google Scholar hIa	Life Sciences = 100
Humanities	3.5	13	0.18	38	0.36	56
Social Sciences	9.6	36	0.42	91	0.66	102
Engineering	13.5	50	0.41	89	0.53	82
Sciences	25.6	95	0.45	96	0.57	89
Life Sciences	27.1	100	0.46	100	0.65	100

Different data-sources between disciplines: Statistics

- For the ISI h-index gender, rank and discipline differences explain nearly 60% of the variance
- For GS hIa, the explained variance is only 14%
  - Reduction of differences across levels of appointment
  - Reduction of differences across disciplines

	ISI h-index		Google Scholar hIa	
	Stand. Beta	**Significance**	**Stand. Beta**	**Significance**
Gender = Female	-0.066	0.222	-0.017	0.822
Rank Professor	0.361	**0.000**	0.217	**0.006**
Humanities	-0.591	**0.000**	-0.356	**0.000**
Social Sciences	-0.491	**0.000**	0.020	0.816
Engineering	-0.357	**0.000**	-0.149	0.087
Sciences	-0.045	0.468	-0.123	0.178
Adjusted R-square	**0.591**		**0.139**	

Quick comparison across disciplines

- H-index ISI data
  - Life Sciences vs. Humanities: 27 vs. 3.5
    - i.e. **nearly 8 times** as high
  - Life Sciences vs. Social Sciences: 27 vs. 9.5
    - i.e. **nearly 3 times** as high
- hIa-index GS data
  - Life Sciences vs. Humanities: 0.65 vs. 0.34
    - i.e. **nearly 2 times** as high
  - Life Sciences vs. Social Sciences: 0.65 vs. 0.66
    - i.e. **nearly identical** (1.5% lower)

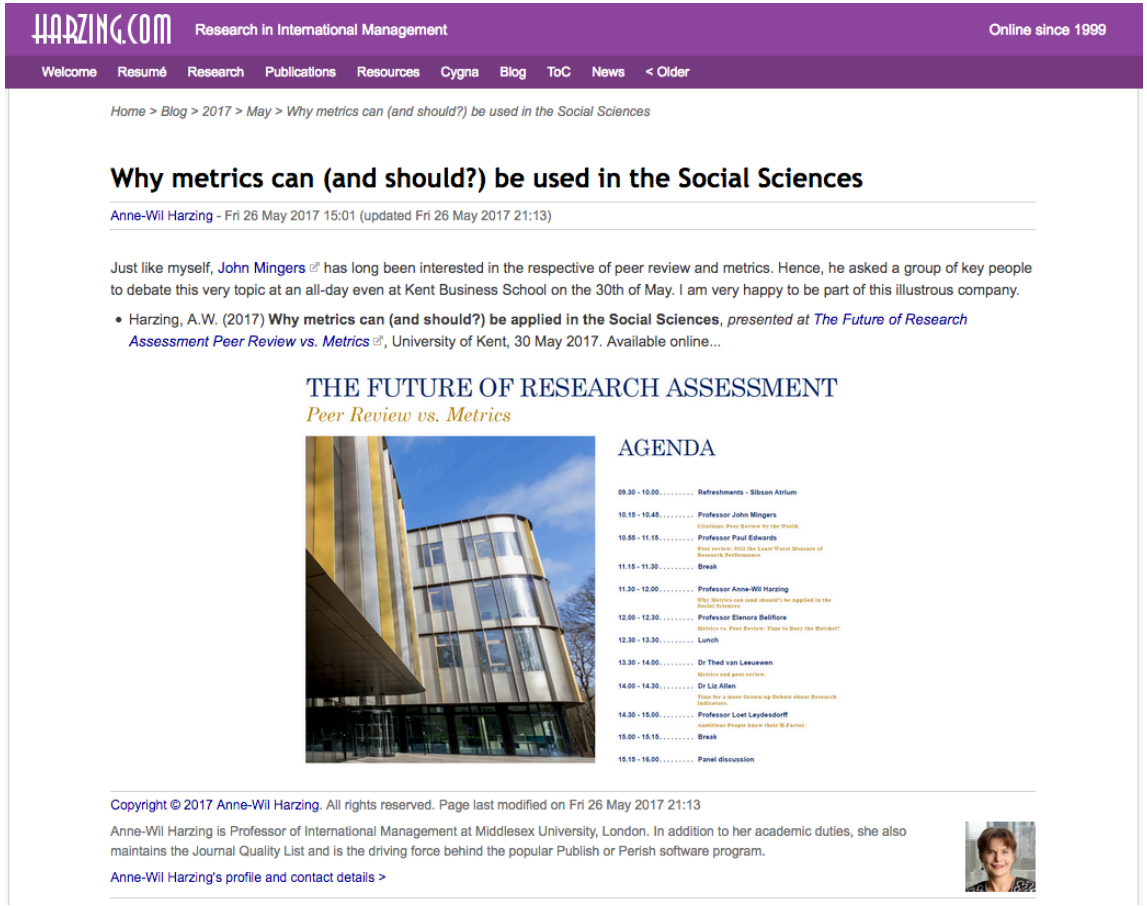
Individual comparisons for the three databases

	number of academics (out of 146) for whom the metric in question is higher or lower than the corresponding metric in the WoS					
	Higher than WoS	< 5% Lower	5%-10% Lower	10%-25% Lower	>25% Lower	Affected academics
GS publications	143	2	0	0	1	None; differences are caused by Web of Science errors + one mega-authored paper
GS citations	145	0	0	1	0	
GS h-index	145	1	0	0	0	
GS hIa	146	0	0	0	0	
Scopus publications	133	3	5	4	1	Older academics Social Sciences 13%* Humanities 21% Life Sciences 28% Sciences 43%
Scopus citations	110	6	7	15	8	
Scopus h-index	115	9	8	11	3	
Scopus hIa	113	3	10	17	3	

Conclusion

- Will the use of citation metrics disadvantage the Social Sciences and Humanities?
  - Not, if you use a database that includes publications important in those disciplines (e.g. books, national journals)
  - Not, if you correct for differences in co-authorships
- Is peer review better than metrics in the Social Sciences and Humanities?
  - Yes, in a way…. The **ideal version** of peer review (informed, dedicated, and unbiased experts) is better than a **reductionist version** of metrics (ISI h-index or citations)
  - **However**, the **inclusive version** of metrics (GS hIa) is probably better than the likely **reality** of peer review (hurried semi-experts, potentially influenced by journal outlet and affiliation)
- In research evaluation at any level use a combination of peer review and metrics wherever possible, but:
  - If reviewers are not experts, metrics might be a better alternative
  - If metrics are used, use an inclusive database (GS, Microsoft Academic, or Scopus) and career and discipline adjusted metrics

Slides are available here



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Why metrics can (and should?) be used in the Social Sciences

Anne-Wil Harzing - Fri 26 May 2017 15:01 (updated Fri 26 May 2017 21:13)

Just like myself, John Mingers has long been interested in the respective of peer review and metrics. Hence, he asked a group of key people to debate this very topic at an all-day even at Kent Business School on the 30th of May. I am very happy to be part of this illustrous company.

- Harzing, A.W. (2017) **Why metrics can (and should?) be applied in the Social Sciences**, *presented at The Future of Research Assessment Peer Review vs. Metrics*, University of Kent, 30 May 2017. Available online...

THE FUTURE OF RESEARCH ASSESSMENT

Peer Review vs. Metrics

AGENDA

09.30 - 10.00..... Refreshments - Sibson Atrium

10.15 - 10.45..... Professor John Mingers

10.50 - 11.15..... Professor Paul Edwards

11.15 - 11.30..... Break

11.30 - 12.00..... Professor Anne-Wil Harzing

12.00 - 12.30..... Professor Elenora Bellfiore

12.30 - 13.30..... Lunch

13.30 - 14.00..... Dr Thed van Leeuwen

14.00 - 14.30..... Dr Liz Allen

14.30 - 15.00..... Professor Loet Leydesdorff

15.00 - 15.15..... Break

15.15 - 16.00..... Panel discussion

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Anne-Wil Harzing is Professor of International Management at Middlesex University, London. In addition to her academic duties, she also maintains the Journal Quality List and is the driving force behind the popular Publish or Perish software program.

Anne-Wil Harzing's profile and contact details >

https://www.harzing.com/blog/2017/05/why-metrics-can-and-should-be-used-in-the-social-sciences

Want to know more?

- Harzing, A.W.; Alakangas, S. (2016) Google Scholar, Scopus and the Web of Science: A longitudinal and cross-disciplinary comparison, *Scientometrics*, 106(2): 787-804
- For more details see:
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- Any questions?

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