Beethoven vs. Bieber On the meaningfulness of (alt)metrics

> Blaise Cronin Indiana University

Top-100 all-time World Cup footballers **theguardian**



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Canonicity vs. Iconicity



Twit(ter)



Facebook

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Biebermetrics

Justin Bieber Statistics	Data	
Date Justin Bieber was born	3.1.1994	
Number of YouTube video views	3.75 Billion	
Number of songs from his My World album that reached the Billboard Hot 100	7 of 7	
Number of Facebook fans	57,000,000	
Number of Twitter followers	45,000,000	
Box Office sales for Justin Bieber "Never Say Never"	\$98,441,954	
Time it took Justin Bieber to sell out Madison Square Garden	22 Minutes	
Justin Bieber Studio Album Sales Statistics	Albums Sold	
Believe	5,500,000	
Under the Misletoe	2,200,000	
My World 2.0	5,100,000	
Total Albums Sold	12,800,000	
My World Tour Statistics	Data	
Total Number of Shows	88	
Total number of sold out shows	67	
Total number of tickets sold	1,398,690	
Total ticket sales revenue	\$83,341,886	

Facebook



About Beethoven

Musician/Band

Ludwig van Beethoven was a German composer and pianist. A crucial figure in the transition between the Classical and Romantic eras in Western art music, he remains one of the most famous and influential of all composers. His best known compositions include 9 symphonies, 5 concertos for piano, 32 piano sonatas, and 16 s...

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Beethoven vs. Bieber







Apples & Oranges



Apples ... and apples



The numbers game

'Not everything that can be counted counts and not everything that counts can be counted'



Defining excellence

'But I know it when I see it'

U.S. Supreme Court Justice Potter Stewart, 1964

'It is easier to measure activities than it is to measure quality'

NISO, 2014

Assessing excellence (Peer review ... on a good day)

- Domain knowledge
- Expertise
- Discrimination
- Connoisseurship
- Wisdom

A culture of metrics

Yesterday (c. 1955): ISI's Citation indexes (SCI, SSCI A&HCI)

Today: WoS, Scopus, Google Scholar, *et al.*

Tomorrow: Social media monitoring & analytics (altmetric.com)



Measuring article impact

- Reputation of journal
- Journal Impact factor
- No. of citations
- Quality of citations
- Persistence of citations
- Times accessed
- Times downloaded
- Included in syllabi
- Media mentions
 etc.



Beyond bibliometrics

 Citations miss important traces/impacts & are lagged

 Online reference managers, slide-sharing services and social media capture impacts in real-time (but only partially)



Twitter reality

a) All scholars

b) % with Twitter accounts

c) % who tweet

d) % of tweets about scholarly topics

e) % that are "Twitter citations"/

Scholarly buzzometer



'Researchers must ask if altmetrics really reflect impact, or just empty buzz.' – altmetics manifesto





Forms of attention (Beethovian or Bieberesque?)

Haustein et al. (2014). Tweeting biomedicine. JASIST, 65(4), 656-669.

Article	Journal	С	Т
Hess et al. (2011). Gain of chromosome band 7q11 in papillary thyroid carcinomas of young patients is associated with exposure to low-dose irradiation	PNAS	9	963
Yasunari et al. (2011). Cesium-137 deposition and contamination of Japanese soils due to the Fukushima nuclear accident	PNAS	30	639
Sparrow et al. (2011). Google Effects on Memory: Cognitive Consequences of Having Information at Our Fingertips	Science	11	558
Onuma et al. (2011). Rebirth of a Dead Belousov–Zhabotinsky Oscillator	Journal of Physical Chemistry A		549
Silverberg (2012). Whey protein precipitating moderate to severe acne flares in 5 teenaged athletes	Cutis		477
Wen et al. (2011). Minimum amount of physical activity for reduced mortality and extended life expectancy: a prospective cohort study	Lancet	51	419
Kramer (2011). Penile Fracture Seems More Likely During Sex Under Stressful Situations	Journal of Sexual Medicine		392
Newman & Feldman (2011). Copyright and Open Access at the Bedside	New England Journal of Medicine	3	332
Reaves et al. (2012). Absence of Detectable Arsenate in DNA from Arsenate-Grown GFAJ-1 Cells	Science	5	323
Bravo et al. (2011). Ingestion of Lactobacillus strain regulates emotional behavior and central GABA receptor expression in a mouse via the vagus nerve	PNAS	31	297

Citations *≠* Altmetrics

- Cites \rightarrow authors Alts \rightarrow readers
- Cites \rightarrow few Alts \rightarrow many

Cites \rightarrow lagged Alts \rightarrow real-time

Cites → mandatory Alts → optional

Effects of research



Immediate vs. delayed impacts

Scholarly vs. professional vs. sociocultural impacts

Cited vs. read vs. used

Substance vs. buzz

Immediate feedback: PLOS articlelevel metrics



CrossRef (3), Scopus (7) Search for citations in Google Scholar.

Article	About the Authors	Metrics	Comments	Related Content
		*		

Viewed 📀

Total Article Views		HTML Page Views	PDF Downloads	XML Downloads	Totals
115,929 May 19, 2009 (publication date) through Aug 14, 2013*	PLOS	104,552	9,329	184	114,065
	PMC	1,482	382	n.a.	1,864
	Totals	106,034	9,711	184	115,929
	9.16% o	f article views led to I	PDF downloads		



*Although we update our data on a daily basis, there may be a 48-hour delay before the most recent numbers are available. PMC data is posted on a monthly basis and will be made available once received.

Article-level metrics

- Transparency
- Real-time
- Multi-dimensional
- Countable
- Ego-boosting
- Behavior-modifying
- Culturally corrosive?





Academic social capital

- Highly 'liked'
- Much tweeted/followed
- Frequently blogged about
- Highly recommended
- Often mentioned/quoted in the media



Not to be confused! Symbolic Social capital capital





Complementary metrics

- Acknowledgments
- Data citation counts
- Micro-attributions for data curation
- Social media mentions
- Recommendations
- Downloads
- Mentions in extrascientific texts
- Press coverage etc., etc...









MENDELEY

Anticipating altmetrics:

Cronin et al. Invoked on the Web. JASIST, 1998.

'polymorphous mentioning'

'presence density'

'diverse ways in which academic influence is exercised and acknowledged'







Jason Priem, 2011



Genres of altmetrics

Taylor & Plume (2014)



Unequal attention

Taylor & Plume (2014)



The hunt for correlations...

- Citations in *Wikipedia* and JCR data (Nielsen, 2007)
- Article tweets and citations (Eysenback, 2012)
- F1000 score and JIF (*Nature Neuroscience*, 2005)
- Inclusion in reference managers and citations (Bar-Ilan, 2012)
- Downloads and subsequent citations (Brody et al., 2006; Nieder, Dalhaug, Aandahl, 2013)
- Citations in blogs and subsequent citations (Shema, Bar-Ilan, Thelwall, 2013)
- Altmetrics and citations (Thelwall, Haustein, Larivière & Sugimoto, 2013; Costas, Zahedi & Wouters, 2014)
 Etc., etc.,

Downloads vs. citations ScienceDirect (Moed, 2012)


Downloads vs. citations

Nieder, Dalhaug & Aandah (2013)



Downloads

Twitter mentions vs. arXiv downloads

Shuai, Pep, Bollen (2012)



Downloading, reading, citing Schlögl et al. (2014)



Figure 1 - Downloads vs. cites vs. readers (publication year: 2002-2011, doc type: full-length article)

1 citation = ? tweets

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- Citations
- Acknowledgments
- Downloads
- Tweets
- 'Likes'

etc.

(Alt)metrics issues

Metrics Platforms

- Validity
- Reliability
- Utility
- Ethicality

- Transparency
- Usability
- Persistence
- Cost/benefit ratio

Mirror, mirror on the wall, who is the fairest of them all?

Users, narcissism and control – tracking the impact of scholarly publications in the 21st century

Wouters & Costas (2012)



Google Scholar



Blaise Cronin Edit

Rudy Professor of Information Science, Indiana University Bloomington, USA Edit Bibliometrics - Informetrics - Scientometrics - Webometrics - Scholarly Communication Edit Verified email at indiana.edu Edit My profile is public Edit Link Add homepage

Change photo

Citation indices			Citations to my articles				
	All	Since 2009	516-				L d L
Citations	6386	2530					
h-index	42	23			l		
i10-index	127	62	0 1983	1990	1998	2006	2014



Keywords (1)

Indexation

Related Publications

A Google Scholar h-index for journals: An alternativ...

A Hirsch-type index for journals

An index to quantify an individual's scientific res...

Using the h-index to rank influential British researc...

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Advanced Search

Citation Context (44)

I...Not surprisingly, the h-index is widely used to assess researchers' as well as scientific journals' impact (Ball, 2005; Cronin & Meho 2006; Kelly & Jennions, 2006; van Raan 2006; Bar-Ilan et al, 2007; Meho & Yang, 2007; Harzing & van der Wal 2008)...

----- Panagiota Altanopoulou, et al. Evaluation of ninety-three major Greek university departments using Go...

I...It is also an applicable indicator of the impacts of scientists (Cronin and Meho 2006), institutes (Van Raan 2006), and journals (Schubert and Gla "nzel 2007)...

----- Kun-Yang Chuang, et al. High-impact papers presented in the subject category of water resource...



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Weekly stats update

BLAISE CRONIN



Your RG Score

Score change

See your score

_

Personal stats	Total	Last week					
Q Publication views	2k	27	See views by country / institution				
Full-text requests	9	2	View details				
Full-text downloads	700	11	View details				
Citations	772	1	See who cited your research				
Profile views	156	9	See views by country / institution				
See your stats							

Multiple perspectives on individuals



- WoS
- Scopus
- Mendelay
- GS
- MAS
- Altmetrics

Scholarly Panopticon?

'an Orwellian surveillance net'

'cybernating the academy'

Sosteric, 1999



The Holy Grail of holism

A matrix of established & alternative metrics?

A composite measure/ score (a super hindex)?





Individual Indicator Profile



Acknowledgments

ACUMEN Portfolio

Career Narrative

Links expertise, output, and influence together in an evidence-based argument; included content is negotiated with evaluator and tailored to the particular evaluation

Expertise

- scientific/scholarly
- technological
- communication
- organizational
- knowledge transfer
- educational

Output

- publications
- public media
- teaching
- web/social media
- data sets
- software/tools
- infrastructure
- grant proposals

Influence

- on science
- on society
- on economy
- on teaching



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Evaluation Guidelines

- aimed at both researchers and evaluators
- development of evidence based arguments (what counts as evidence?)
- expanded list of research output
- establishing provenance
- taxonomy of indicators: bibliometric, webometric, altmetric
- guidance on use of indicators
- contextual considerations, such as: stage of career, discipline, and country of residence



New Age numerology?

- Atomization of inputs, outputs and impacts
- Fetishization of metrics
- Transparency vs. triviality
- Immediacy vs. canonicity
- Goal displacement?



Suggested readings

BEYOND BIBLIOMETRICS Harnessing Multidimensional Indicators of Scholarly Impact edited by BLAISE CRONIN and CASSIDY R. SUGIMOTO 15 16 14

Scholarly Metrics Under the Microscope

edited by

Blaise Cronin and Cassidy R. Sugimoto

2014

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