A fetish too far? (Alt)metrics in the groves of academe

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Canonicity *vs.* Iconicity

Twit(ter)

Facebook

Justin Bieber ✔
Musician/Band

Timeline　About　Photos　Download Believe　More ▾

👍 Like　+ Follow　➜ Share　•••

72m people like this

e friends to like this Page

📝 Post　🖼 Photo / Video

Write something...

Post

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

Beethoven *vs.* Bieber

Apples and oranges

Apples ... and apples

Dr. Beethoven *vs.* Dr. Bieber

The new phrenology?

Illustration by David Parkins

The numbers game

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

Willam B. Cameron, 1963

Segmenting an author's *oeuvre*
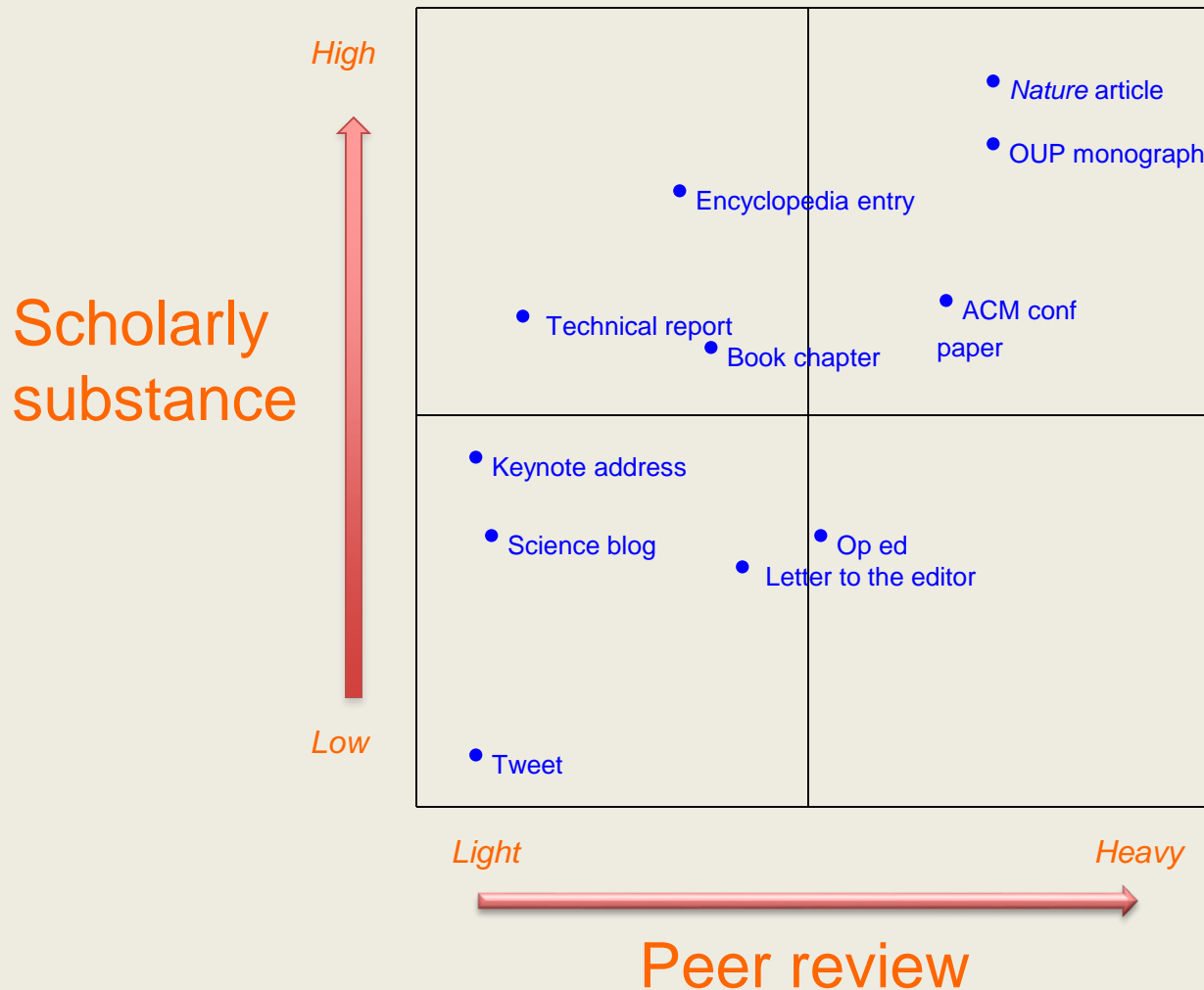
Beyond bibliometrics

- Citations miss important traces/impacts & are lagged

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

Forms of academic authorship

Author

Co-author

Gift author ← *Unearned but granted*

Ghost author ← *Earned but denied*

Co-opted author ← *Hired by Big Pharma*

Sub-author ← *Acknowledgments – trusted peers, colleagues, technicians, funders, et al.*
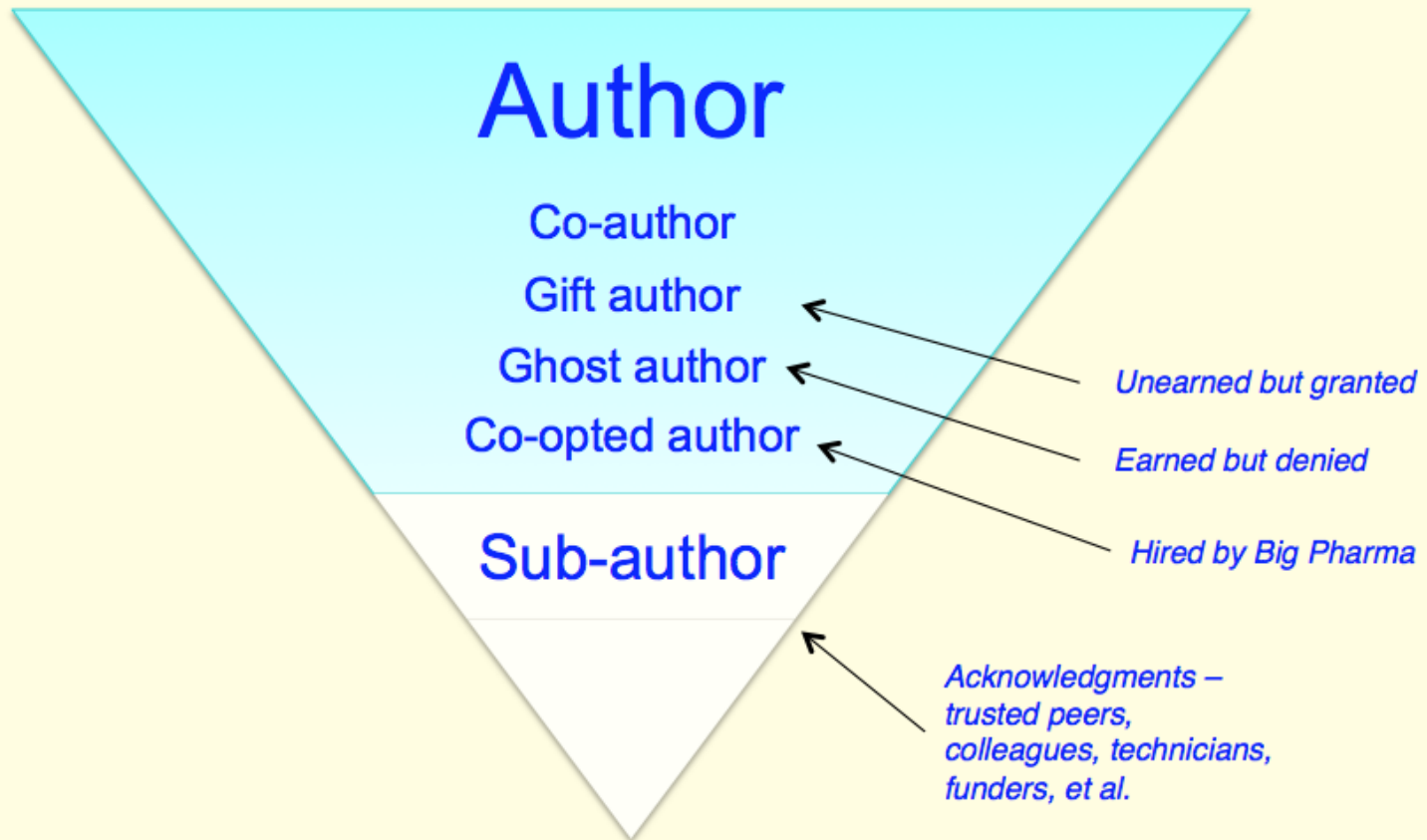
Credit Inflation

More and more scientists are sharing credit as co-authors on research papers, with a sharp increase in reports whose author counts exceed 1,000 people.

Number of authors

1,400 scientific papers

1,200

1,000

800

600

400

200

0

50 or more

100 or more

200 or more

500 or more

1,000 or more

1990   1995   2000   2005   2010   '14
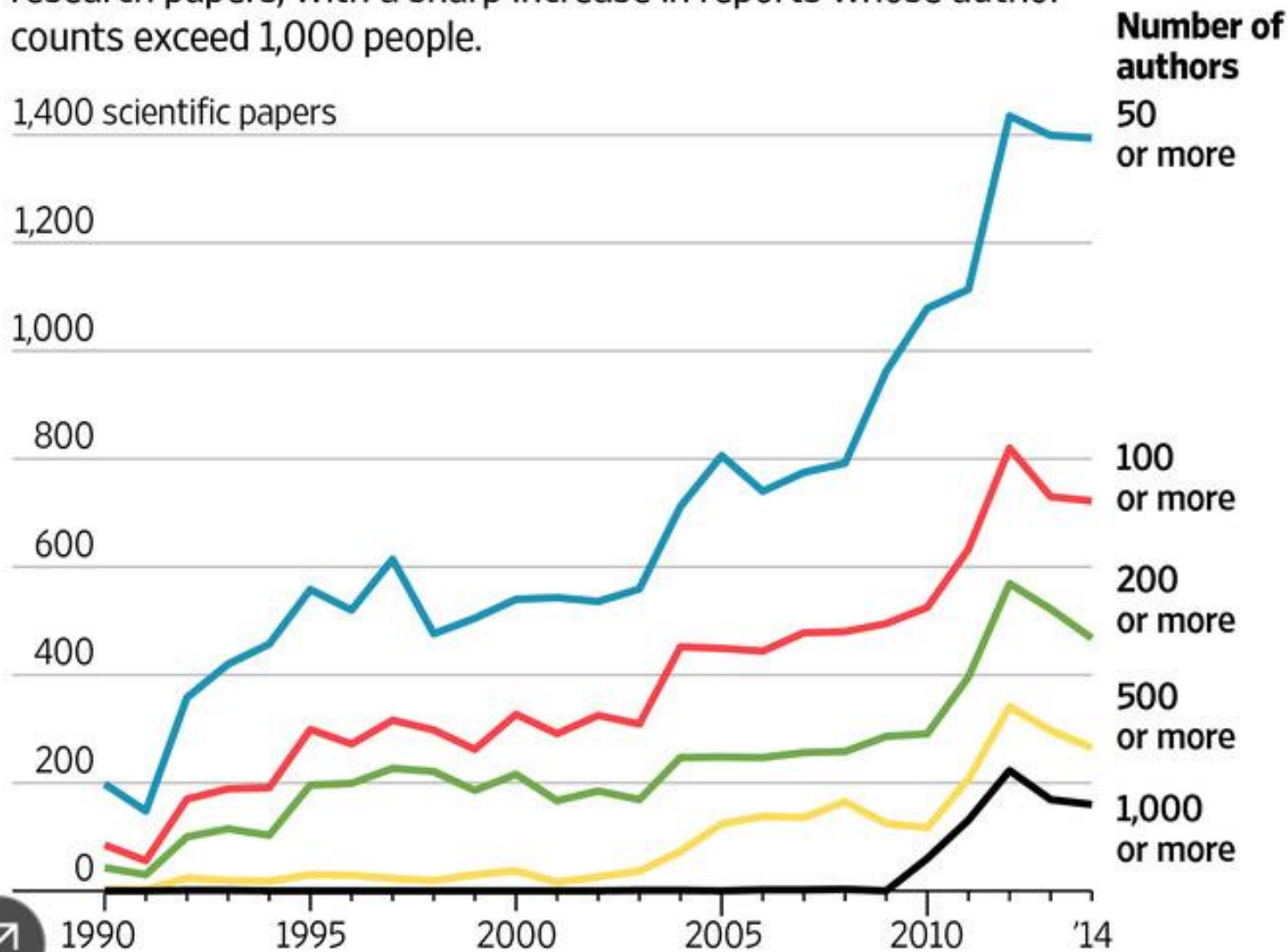
Source: Thomson Reuters Web of Science

THE WALL STREET JOURNAL.

'Hyperauthorship' (Cronin, 2001)
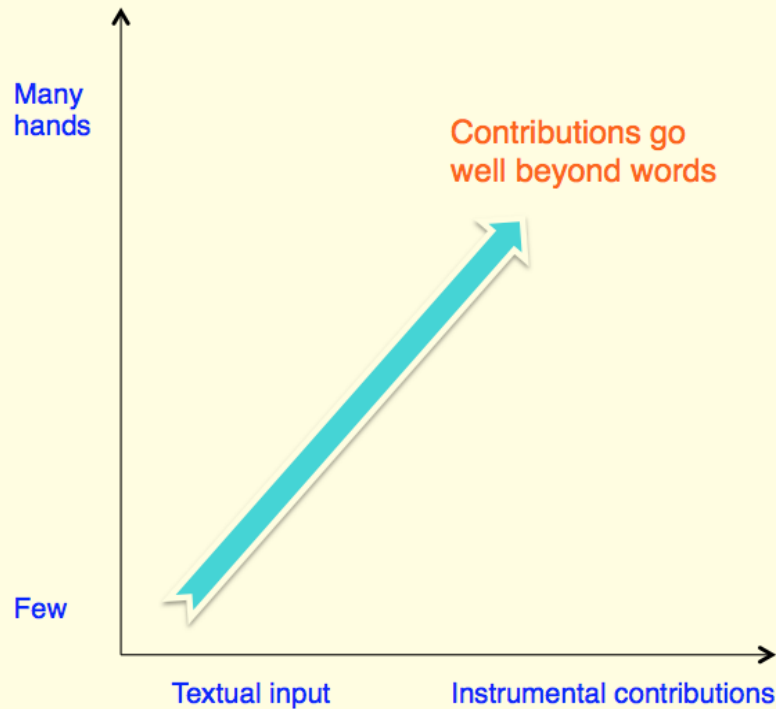
Changing character of academic authorship

Sole author

Then

'Wordy', discursive,
static texts;
narrative; craft activity

Data-intensive texts;
visualizations; animations;
dynamic texts; interactive
data sets, software etc.

Now

Massive collaboration,
fractionalization
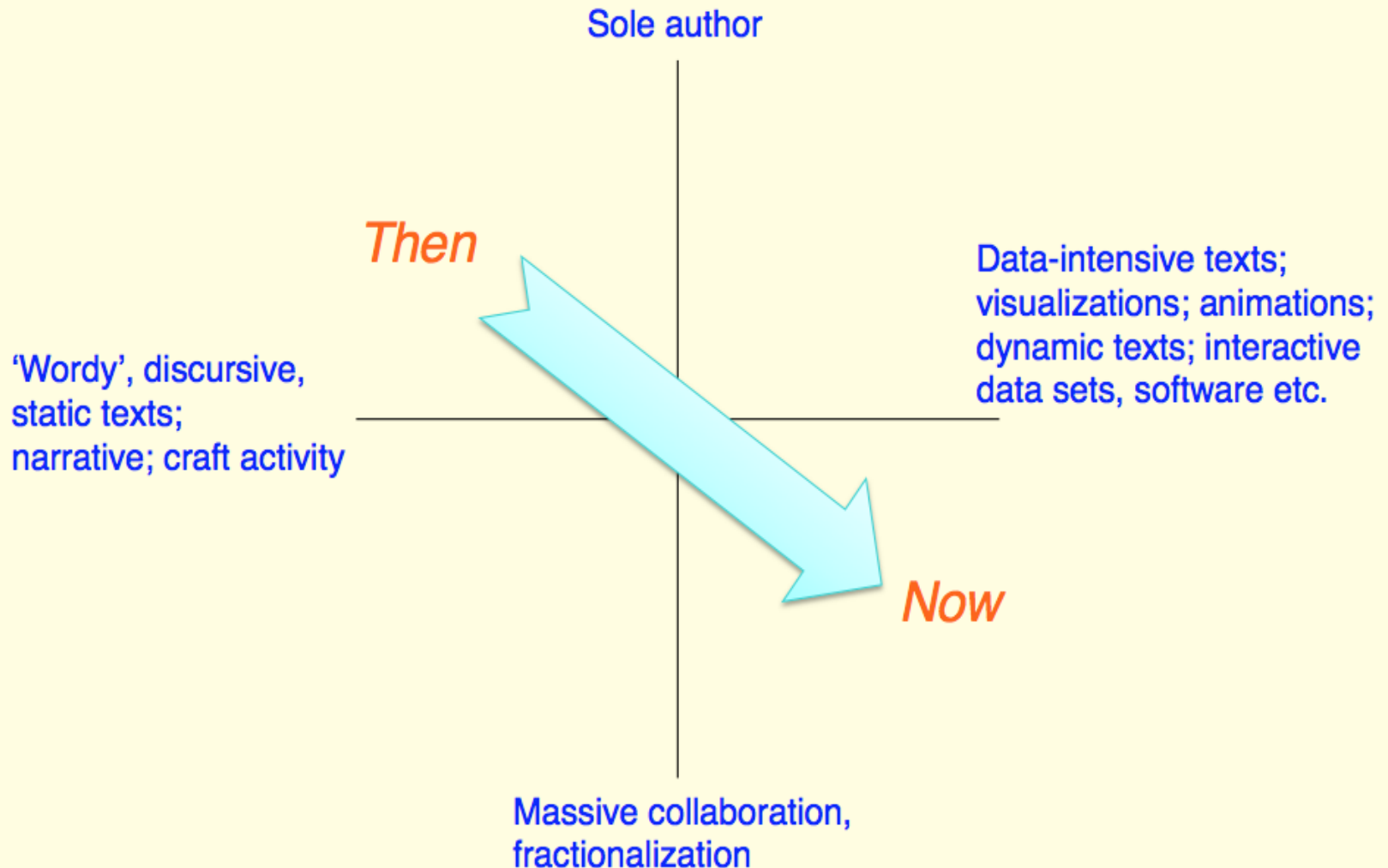
Authorial engagement

Wellcome Trust: Contributorship

This taxonomy provides a high-level classification of the diverse roles performed in the work leading to a published research output in the sciences. Its purpose to provide transparency in contributions to scholarly published work, to enable improved systems of attribution, credit, and accountability.

International Association of STM Publishers: Author Contributorship Badges

Resources
Edward Gomperts
Stephen J. O'Brien
Mark Van Natta
Efe Sezgin
Sharyne Donfield

Data Curation
Nikolay Cherkasov
Anton Svitin

Methodology
Nikolay Cherkasov
Pavel Dobrynin
Stephen J. O'Brien
Holli Dilks
Anton Svitin
Oleksyk Taras
Sergey Malov

Formal Analysis
Nikolay Cherkasov
Pavel Dobrynin
Stephen J. O'Brien
Anton Svitin
Andrey Shevchenko
Efe Sezgin
Sergey Malov

Testing
Nikolay Cherkasov
Pavel Dobrynin
Anton Svitin
Andrey Shevchenko
Efe Sezgin
Sergey Malov

Writing - Initial Draft
Nikolay Cherkasov
Pavel Dobrynin
Stephen J. O'Brien
Anton Svitin
Andrey Shevchenko
Sergey Malov

Computation
Nikolay Cherkasov
Pavel Dobrynin
Anton Svitin
Efe Sezgin
Sergey Malov

Investigation
Pavel Dobrynin

Writing - Review
Stephen J. O'Brien
Anton Svitin
Efe Sezgin
Oleksyk Taras
Sergey Malov

Conceptualization
Stephen J. O'Brien
Holli Dilks
Anton Svitin
Efe Sezgin
Oleksyk Taras
Sergey Malov

Evolving culture of metrics

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

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

Today/Tomorrow: Social media monitoring & analytics (*e.g.,* altmetric.com)

Measuring article impact

• Reputation of journal

• Journal Impact factor

• No. of citations

• Quality of citations

• Persistence of citations

****

• Times accessed

• Times downloaded

• Inclusion in syllabi

• Media mentions

    etc.

Anticipating altmetrics:
'Invoked on the Web' (Cronin et al., **1998**)

'polymorphous mentioning'

'presence density'

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

Scholarly buzzometer – an attention economy (H. Simon)
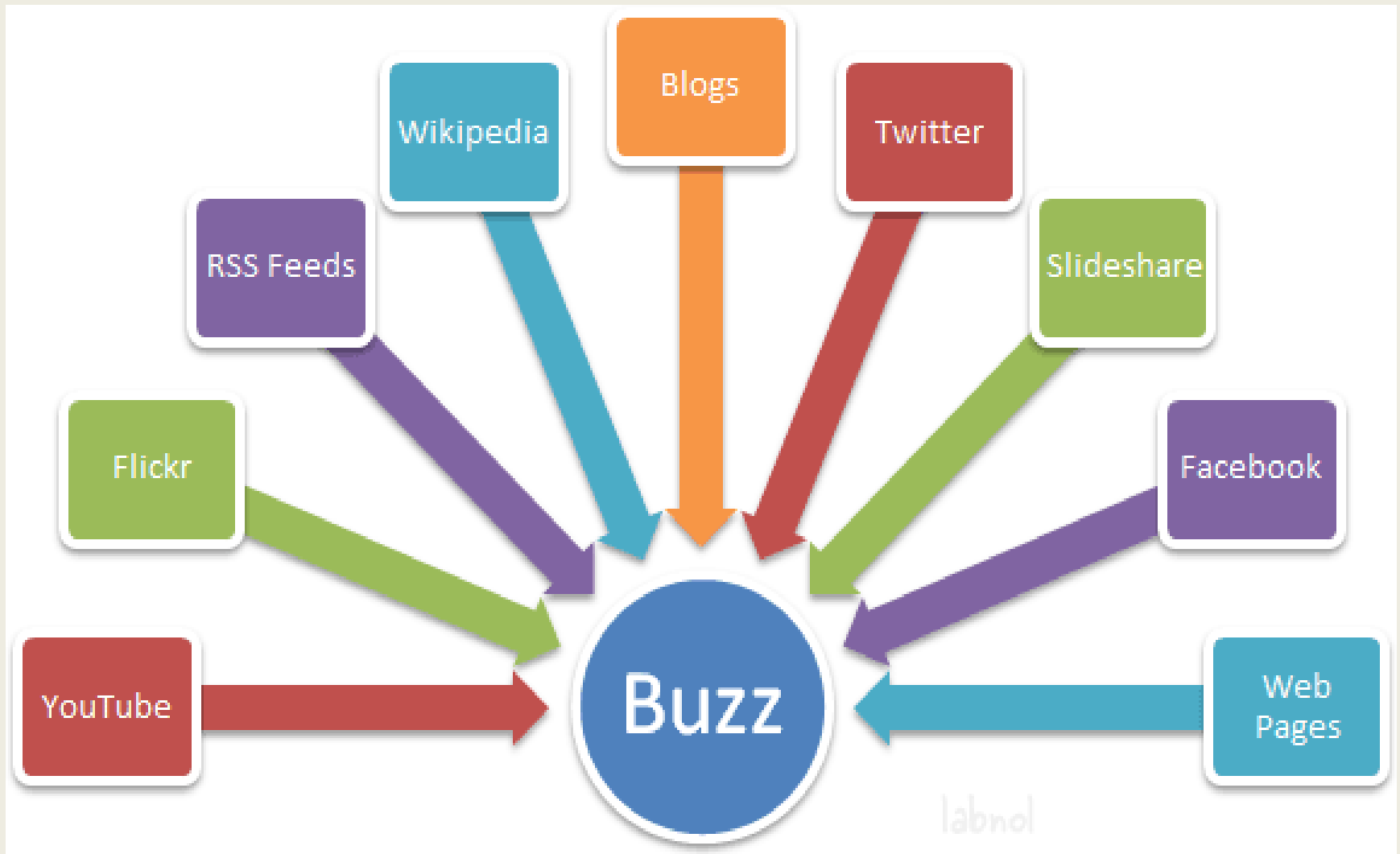
'Researchers must ask if altmetrics really reflect impact, or just empty buzz.'

Effects of research

Immediate *vs.* delayed impacts

Scholarly *vs.* professional *vs.* social impacts

Read *vs.* cited *vs.* used

Substance *vs.* buzz

Viewed ?

*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.

figshare

19

Cited ?

No related citations found
Search for citations in Google Scholar

Discussed ?

WIKIPEDIA The Free Encyclopedia	twitter	facebook	Comments	Google blogs
1	**339**	**3838**	**2**	**Search**
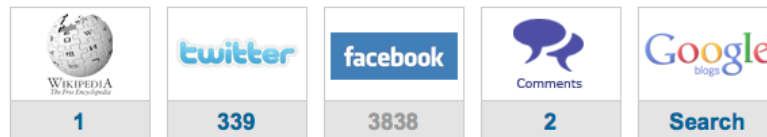
Article-level metrics

- Real-time
- Multi-dimensional
- Countable

****

- Ego-boosting
- Behavior-modifying
- Culturally corrosive?

Bibliometrics: Global gender disparities in science

708

The Altmetric score is one measure of the quality and quantity of online attention that this article has received. You can read about how Altmetric scores are calculated here.

This article scored **707.22**

The context below was calculated when this article was last mentioned on **3rd January 2014**

Compared to all articles in Nature

So far Altmetric has tracked 22,562 articles from this journal. They typically receive a lot more attention than average, with a mean score of 35.3 vs the global average of 4.5. This article **has done particularly well**, scoring higher than 99% of its peers.

In the 99%ile	Ranks 88th

All articles of a similar age

Older articles will score higher simply because they've had more time to accumulate mentions. To account for age we can compare this score to the 48,625 tracked articles that were published within six weeks on either side of this one in any journal. This article has done particularly well, scoring **higher than 99% of its contemporaries.**

In the 99%ile

Other articles of a similar age in Nature

We're also able to compare this article to 621 articles from the same journal and published within six weeks on either side of this one. This article **has done very well**, scoring higher than 97% of its contemporaries.

In the 97%ile	Ranks 16th

All articles

More generally, Altmetric has tracked 1,766,495 articles across all journals so far. Compared to these this article has done particularly well and is in the 99th percentile: it's **in the top 5% of all articles ever tracked** by Altmetric.

In the 99%ile

Score in context

Puts article in the top 5% of all articles ranked by attention

show more...

Mentioned by

- **685** tweeters
- **121** Facebook users
- **6** news outlets
- **10** science blogs
- **9** Google+ users
- **6** Redditors

Readers on

- **0** Mendeley
- **0** CiteULike

Track this article

- Get email updates when this article is shared

Academic social capital

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

Genres of altmetrics

Taylor & Plume (2014)

Social activity

(tweets, 'likes')

Mass media

(news coverage)

Altmetrics

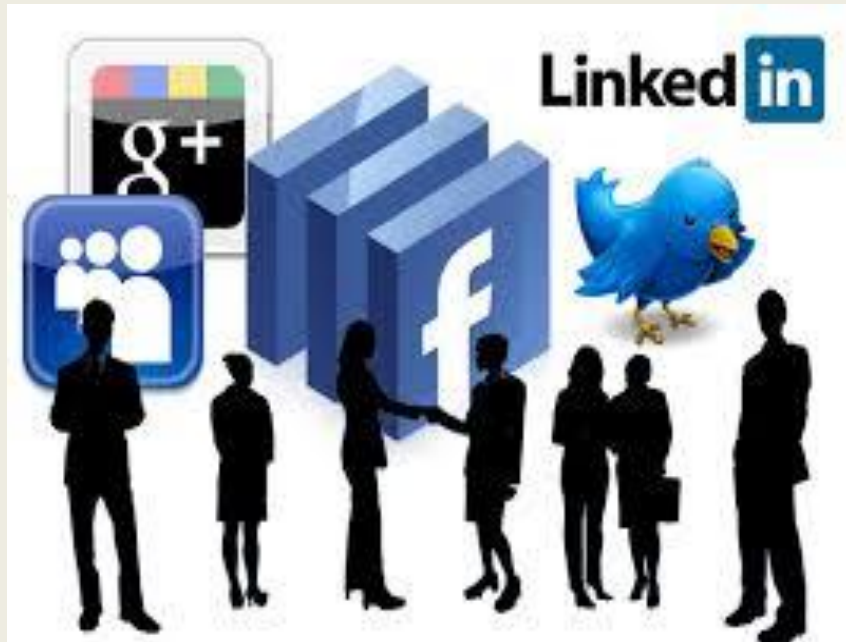**Scholarly commentary**

(scientific blogs)

Scholarly activity

(reference managers)

Not to be confused!

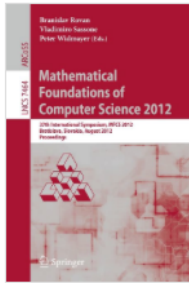*Social* capital   *Symbolic* capital

Attention ≠ Impact

Complementary metrics

- Acknowledgments
- Data citation counts
- Micro-attributions for data curation
- Social media mentions
- Recommendations
- Downloads
- Mentions in extra-scientific texts
- Press coverage

etc., etc…

Bookmetrix

MATHEMATICAL FOUNDATIONS OF COMPUTER SCIENCE 2012 – 2012

EDITORS	Branislav Rovan · Vladimiro Sassone · Peter Widmayer
ISBN	9783642325892 · 9783642325885
DOI	10.1007/978-3-642-32589-2
DISCIPLINES	Computer Science
SUBDISCIPLINES	Theoretical Computer Science

VIEW ON PUBLISHER SITE

SHOW ACTIVITY FOR:

SUMMARY
Combined activity for all chapters
`22` `80` `110` `29K` `0`

CHAPTER 1
On the Complexity of Ontological Reasoning under Disjunctive Existential Rules
`0` `0` `5` `639`

CHAPTER 2
New Races in Parameterized Algorithmics
`1` `0` `6` `444`

CHAPTER 3
Scott Is Always Simple
`0` `0` `1` `374`

CHAPTER 4
A Toolkit for Proving Limitations of the Expressive Power of Logics
`0` `0` `0` `377`

CHAPTER 5
How to Reconstruct a Genome
`0` `0` `0` `400`

CHAPTER 6
Simple Models for Recursive Schemes
`0` `0` `2` `394`

CHAPTER 7
Transportation under Nasty Side Constraints
`0` `0` `0` `385`

ALL ACTIVITY FOR BOOK:

Mathematical Foundations of Computer Science 2012

CITATIONS	MENTIONS	READERS	DOWNLOADS	REVIEWS
22	80	110	29k	0

CITATIONS SUMMARY

Showing **1–20** of **22** total citations.   `1` `2`

Journal article in **Theoretical Computer Science**

2015

A Bounded Budget Network Creation Game
Journal article in **ACM Transactions on Algorithms**

Centrality measures-based algorithm to visualize a maximal common induced subgraph in large communication networks
Journal article in **Knowledge and Information Systems**

Deciding Determinism of Regular Languages
Journal article in **Theory of Computing Systems**

On the Parameterized Complexity of Computing Balanced Partitions in Graphs
Journal article in **Theory of Computing Systems**

Structural Parameterizations for Boxicity
Journal article in **Algorithmica**

Synthesizing structured reactive programs via deterministic tree automata
Journal article in **Information and Computation**

Pancake Flipping is hard
Journal article in **Journal of Computer and System Sciences**

An Audit Tool for Genome Rearrangement Algorithms
Journal article in **Journal of Experimental Algorithmics**

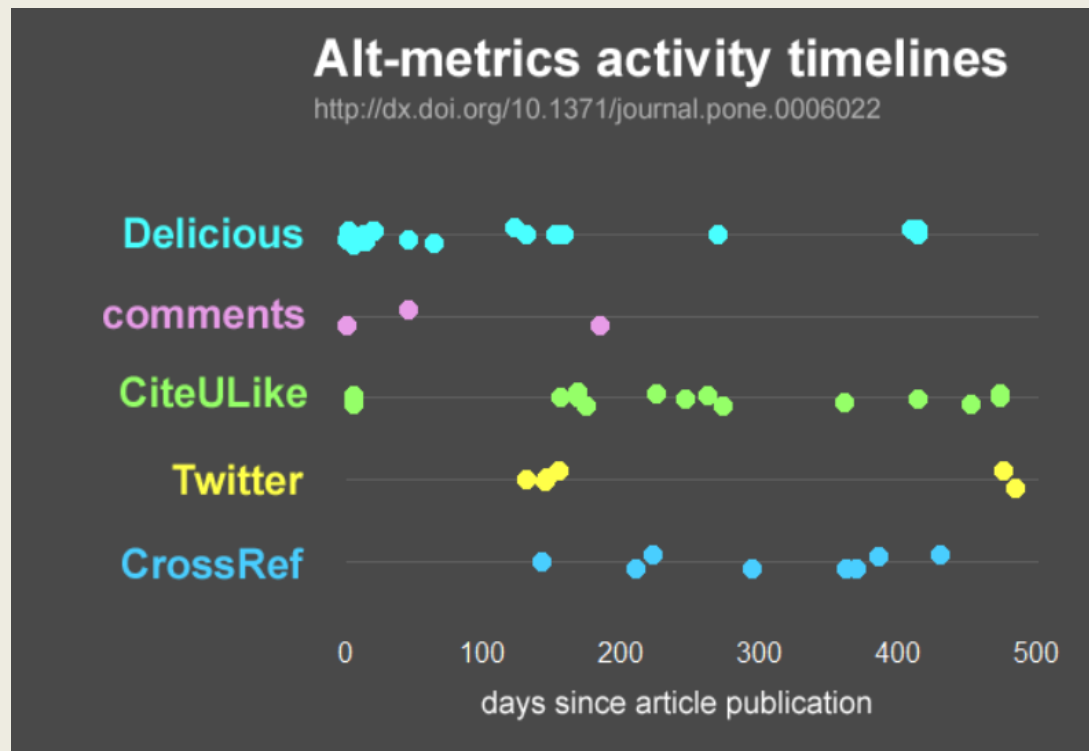Uniform strategies, rational relations and jumping automata
Journal article in **Information and Computation**

Impactstory

Jason Priem, 2011

Alt-metrics activity timelines
http://dx.doi.org/10.1371/journal.pone.0006022

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)
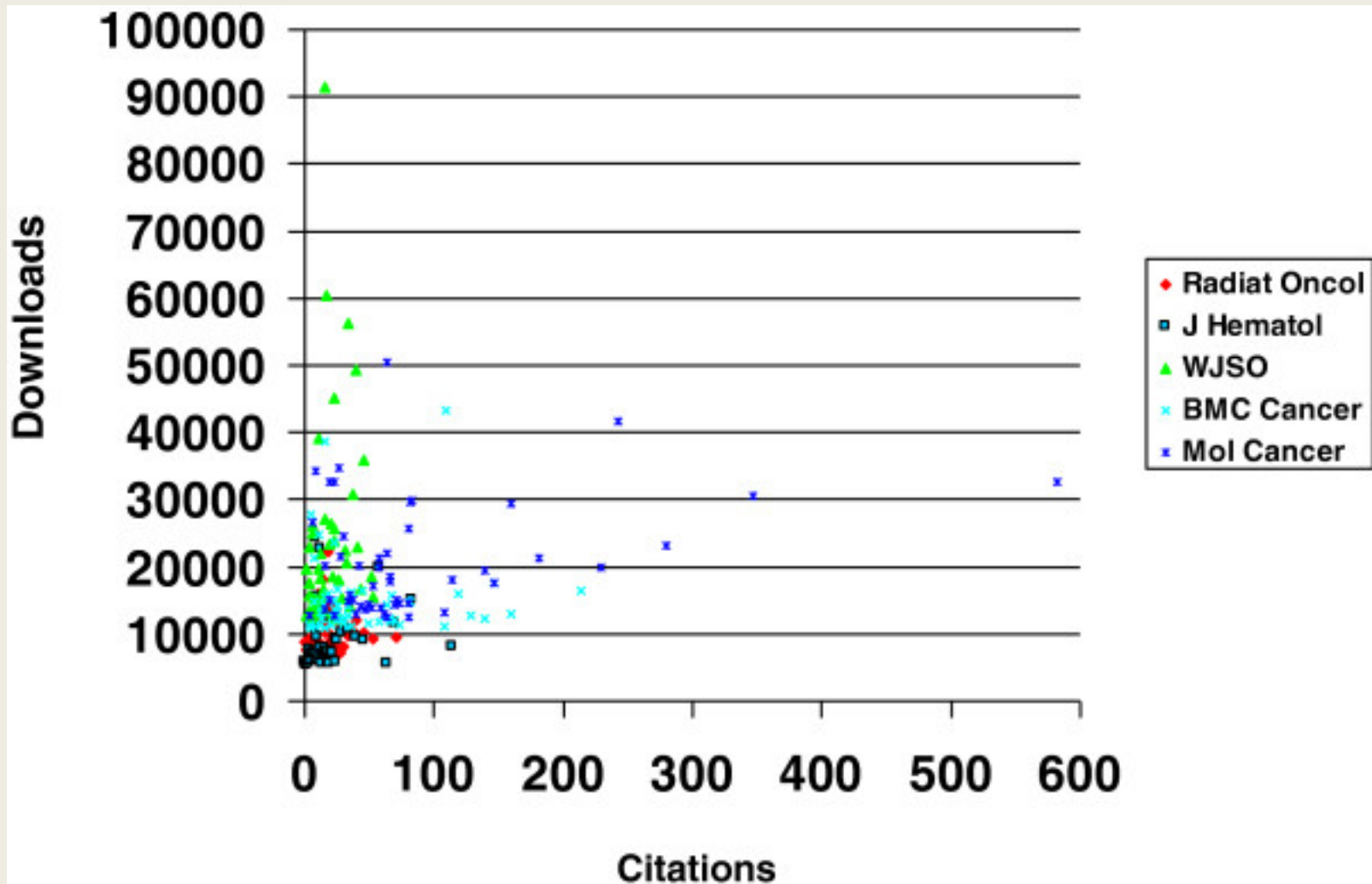
    Etc., etc., ….

Downloads *vs.* citations *ScienceDirect*
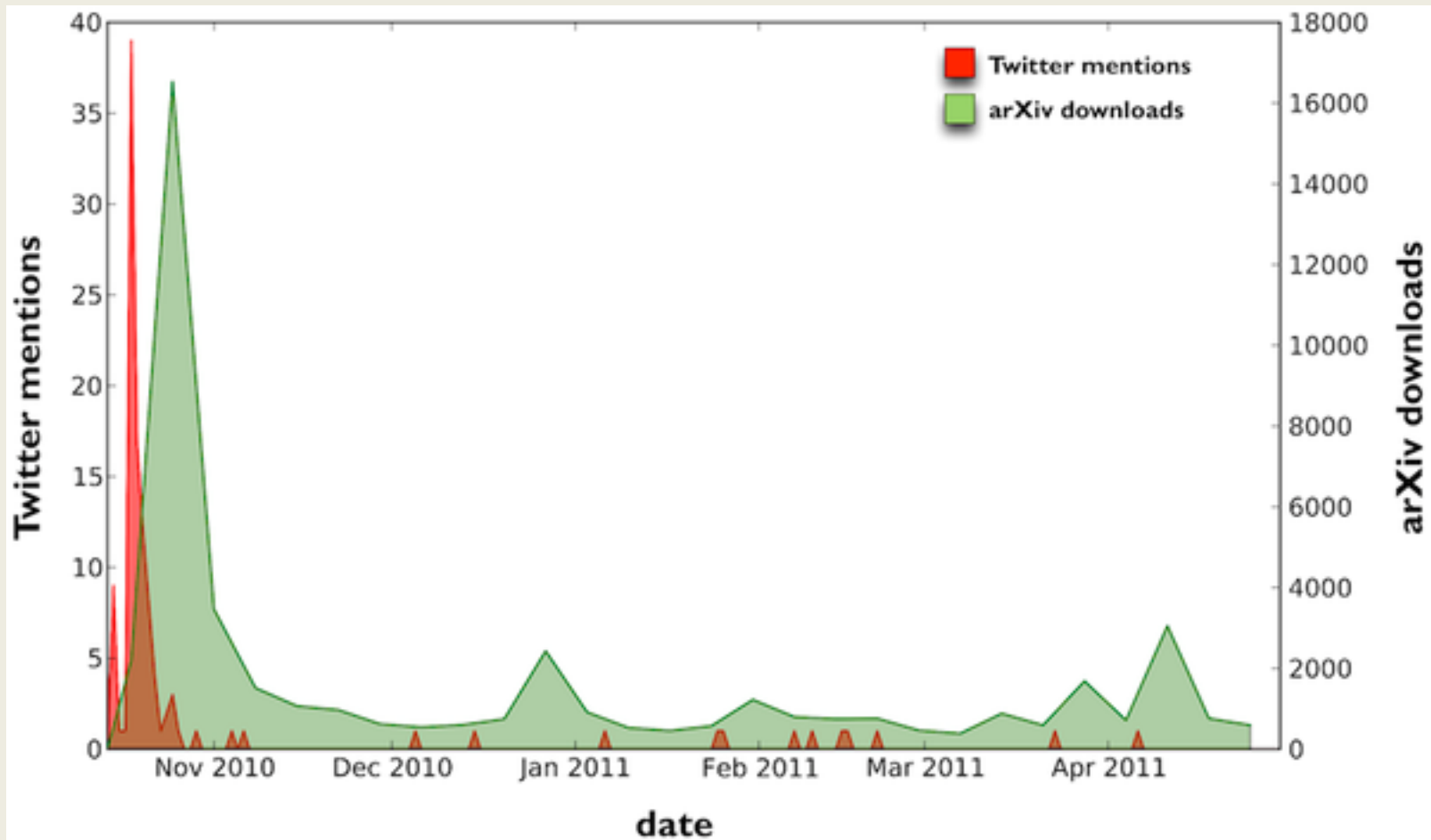
(Moed, 2012)
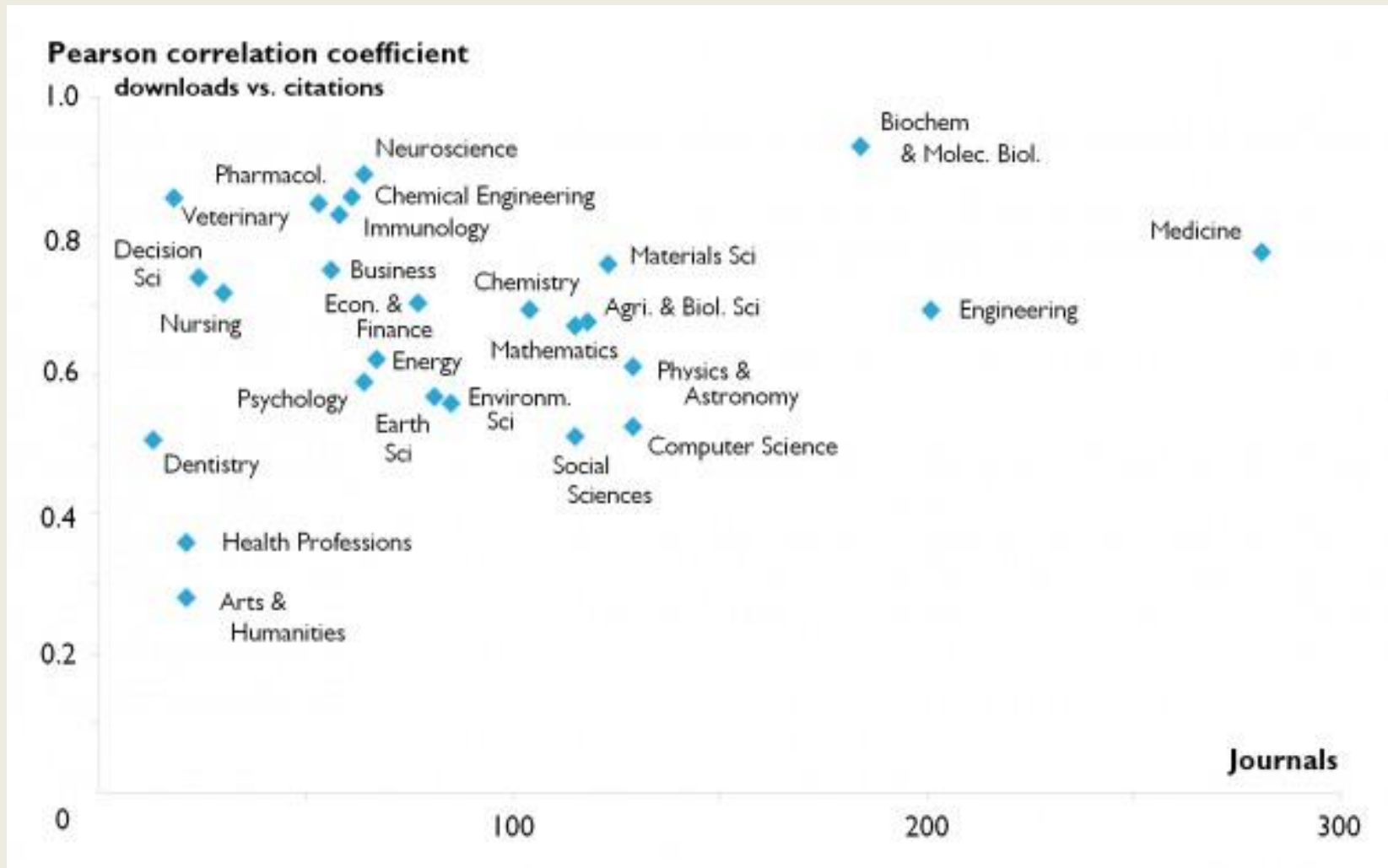
Downloads & citations

Nieder, Dalhaug & Aandah (2013)

Twitter mentions & arXiv downloads

Shuai, Pep, Bollen (2012)

1 citation = ? tweets

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

etc.

(Alt)metrics issues

Metrics

- Validity
- Reliability
- Utility
- Ethicality

Platforms

- 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:
Ego-boosting/deflating

Trivial pursuits

Reads: your stats simplified

With improved accuracy and real-time updates, reads shows you exactly how much exposure your work is getting using one straightforward metric.

LEARN MORE

Reads

daily / **weekly**

26 Reads

| 40 | | | | | | | |
| 20 | | | | | | | |

Week ending Aug 30 | Week ending Sep 06 | Week ending Sep 13 | Week ending Sep 20 | Week ending Sep 27 | Week ending Oct 04 | Week ending Oct 11 | Week ending Oct 18
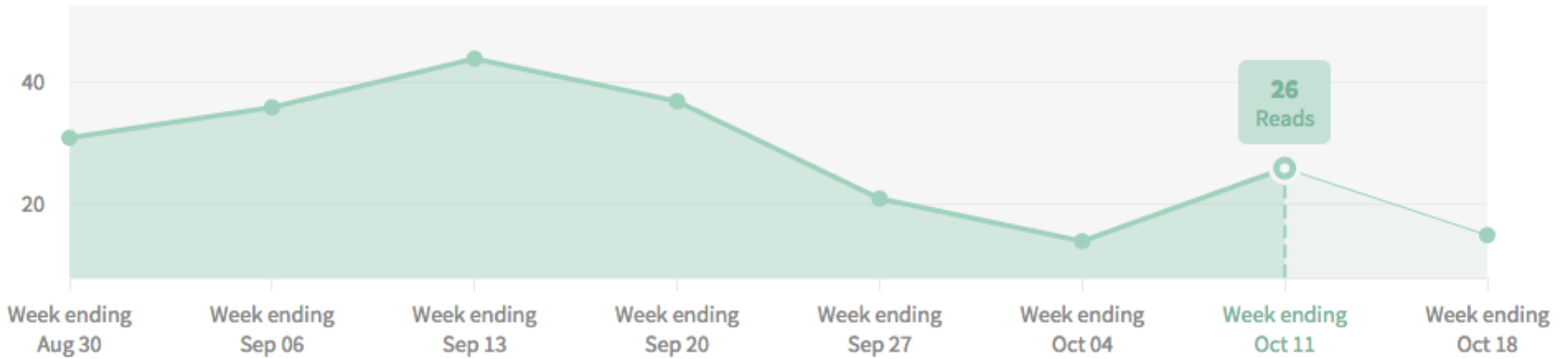
DETAILED STATS FOR **WEEK ENDING OCT 11 2015**

Scholarly Panopticon?

'an Orwellian surveillance net'

'cybernating the academy'

Sosteric, 1999

The Holy Grail of holism

A matrix of established & alternative metrics?

A unified measure/composite score (a super h-index)?

The i-Space
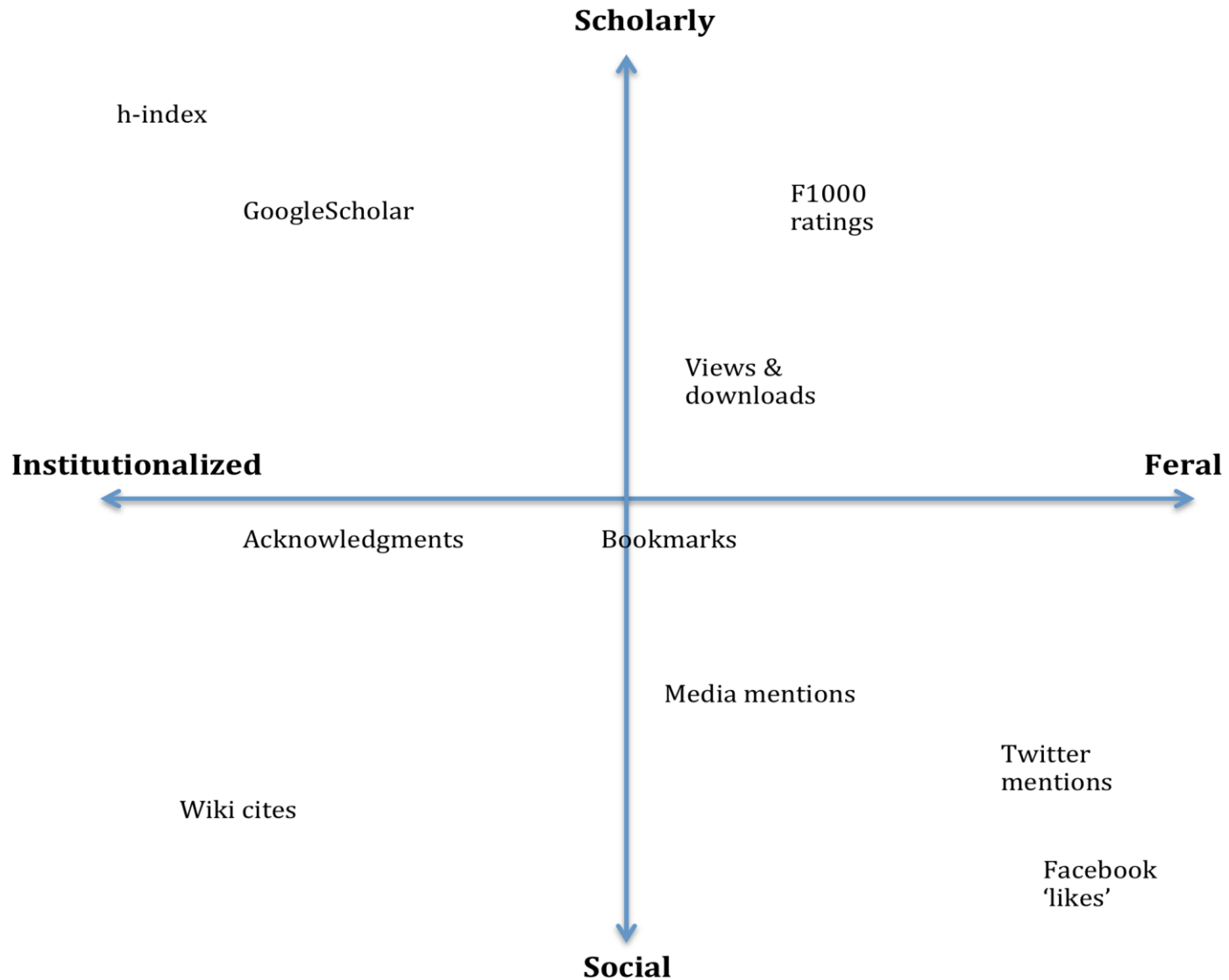# Indicators of Impact

Scholarly

h-index

GoogleScholar

F1000
ratings

Views &
downloads

Institutionalized ← → **Feral**

Acknowledgments   Bookmarks

Media mentions

Twitter
mentions

Wiki cites

Facebook
'likes'

Social

Individual Indicator Profile
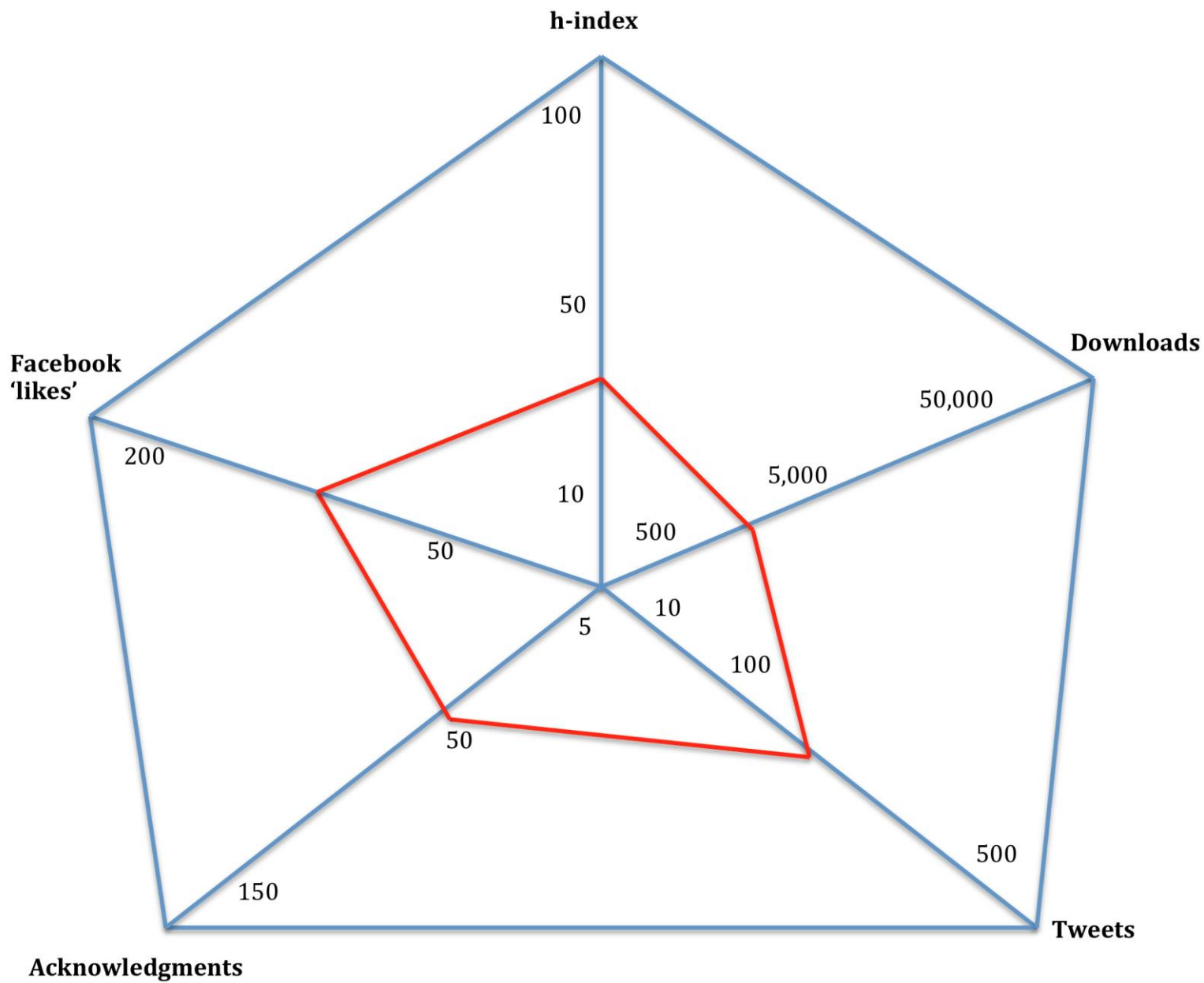
New Age numerology?

- Atomization of inputs, outputs and impacts

- Fetishization of metrics

- Transparency *vs.* triviality

- Immediacy *vs.* canonicity

- Goal displacement?

The Leiden Manifesto (2015)

Ten principles

1. Quantitative evaluation should support qualitative, expert assessment
2. Measure performance against the research missions of the institution, group or researcher,
3. Protect excellence in locally relevant research
4. Keep data collection and analytical processes open, transparent and simple
5. Allow those evaluated to verify data and analysis
6. Account for variation by field in publication and citation practices
7. Base assessment of individual researchers on a qualitative judgement of their portfolio.
8. Avoid misplaced concreteness and false precision
9. Recognise the systemic effects of assessment and indicators
10. Scrutinize indicators regularly and update them.

Leiden Manifesto

https://vimeo.com/133683418

"research metrics can provide crucial information that would be difficult to gather or understand by means of individual expertise. But this quantitative information must not be allowed to morph from an instrument into the goal."

Responsible metrics (Hefce)

 Robustness: basing metrics on the best possible data in terms of accuracy and scope;

 Humility: recognizing that quantitative evaluation should support – but not supplant – qualitative, expert assessment;

 Transparency: keeping data collection and analytical processes open and transparent, so that those being evaluated can test and verify the results;

 Diversity: accounting for variation by field, and using a range of indicators to reflect and support a plurality of research and researcher career paths across the system;

 Reflexivity: recognizing and anticipating the systemic and potential effects of indicators, and updating them in response.

Suggested readings
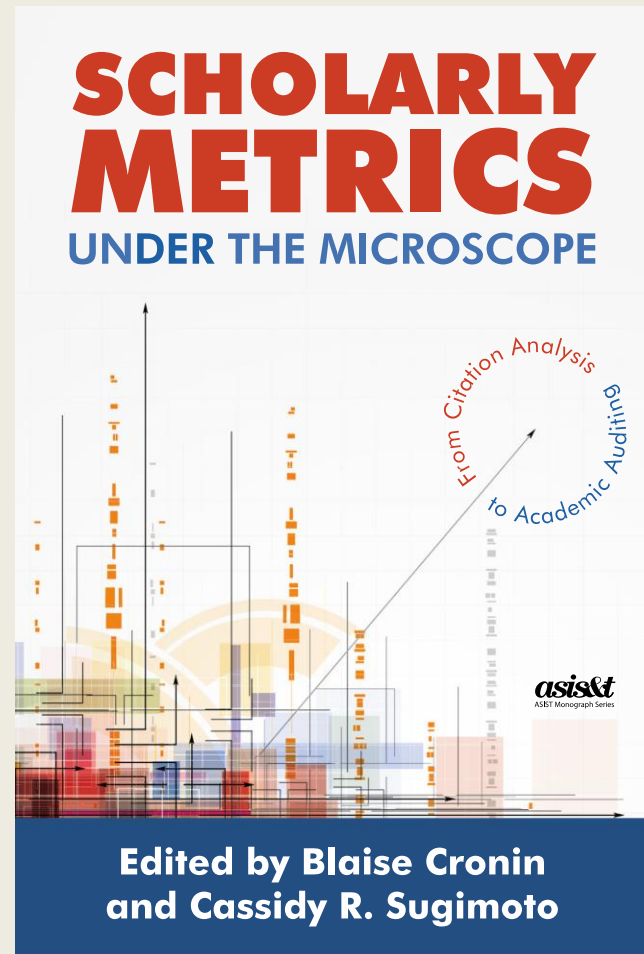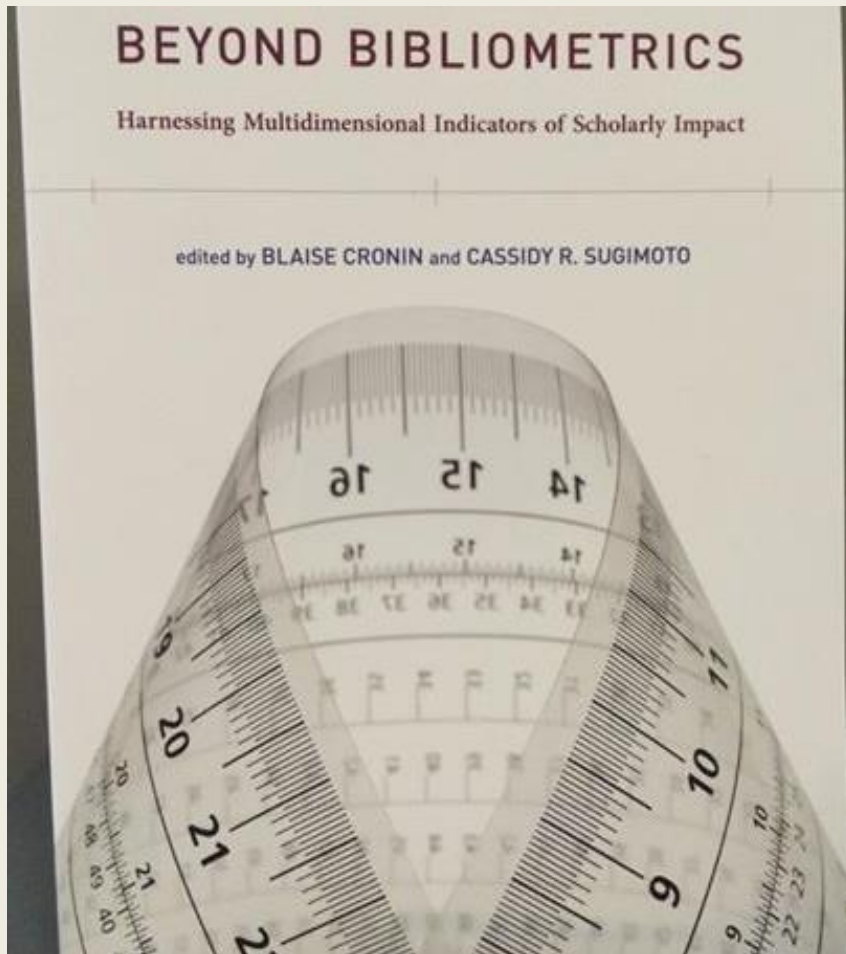
The Metric Tide

Report of the Independent Review
of the Role of Metrics in Research
Assessment and Management

July 2015

Cassidy R. Sugimoto (Ed.)

THEORIES OF INFORMETRICS AND SCHOLARLY COMMUNICATION

CP

Altmetrics for Information Professionals

Past, Present and Future

Kim Holmberg