Altmetrics: Finding Meaningful Needles in the Data Haystack

David Crotty
Senior Editor, Oxford University Press
david.crotty@oup.com

April 21, 2015
New Metrics
How do we measure researcher performance?
New Metrics
Life After Publication

Dynamic in vivo imaging of postimplantation mammalian embryos using whole embryo culture.

Expression of the murine Hoxa4 gene requires both autoregulation and a conserved retinoic acid response element.

Sequences 5' of the homeobox of the Hox-1.4 gene direct tissue-specific expression of lacZ during mouse development.
Why Metrics?

Lack of deep subject knowledge / Scale Problems
The Impact Factor
“One Metric To Rule Them All”
Other Kinds of Impact

• **Clinical Research:** a paper can change the way millions of patients are cared for, yet this is rarely reflected in the citation record.

• **Engineering:** research is often based on problem solving, not hypothesis driven inquiry. Once the problem is solved, few further experiments are needed, hence low citation rates.
New Metrics
“The Streak of Streaks”

“We must have comforting answers. We see pattern, for pattern surely exists, even in a purely random world…Our error lies not in the perception of pattern but in automatically imbuing pattern with meaning, especially with meaning that can bring us comfort, or dispel confusion…We believe in “hot hands” because we must impart meaning to a pattern—and we like meanings that tell stories about heroism, valor, and excellence.”
“It would be nice if all of the data which sociologists require could be enumerated because then we could run them through IBM machines and draw charts as the economists do. However, not everything that can be counted counts, and not everything that counts can be counted.”

William Bruce Cameron
New Metrics
What’s being measured?

- Usage
  - HTML downloads and views
  - PDF downloads and views
- Citations
  - PMC, CrossRef, Scopus, Web of Science
- Mentions and Downloads via Social Networks, Blogs and Other Online Media
  - CiteULike, Mendeley, Twitter, Facebook, LinkedIn, Google+, Pinterest, Reddit, YouTube, Science Blogs, ScienceSeeker, Research Blogging, Wikipedia, Trackbacks, F1000, Stack Exchange, Peerage of Science, SlideShare, FigShare, GitHub, Dryad, arXiv
- Mentions in Traditional Media
- Discussion and Ratings
  - Comments, Notes, Ratings
Usage

Does popularity = impact?

2. Initial Severity and Antidepressant Benefits: A Meta-Analysis of Data Submitted to the Food and Drug Administration

5. Facebook Use Predicts Declines in Subjective Well-Being in Young Adults

10. Serotonin and Depression: A Disconnect between the Advertisements and the Scientific Literature
## Usage

**Does popularity = quality?**

| 1 | Experimental evidence of massive-scale emotional contagion through social networks  
Kramer AD, Guillory JE, Hancock JT |
|---|---|
| 2 | Variation in Melanism and Female Preference in Proximate but Ecologically Distinct Environments  
Culumber ZW, Bautista-Hernández CE, Monks S ... |
| 3 | Artificial sweeteners induce glucose intolerance by altering the gut microbiota  
Suez J, Korem T, Zeevi D ... |
| 4 | Stimulus-triggered fate conversion of somatic cells into pluripotency  
Obokata H, Wakayama T, Sasai Y ... |
Sensationalism
Weird stuff draws attention

3. Fellatio by Fruit Bats Prolongs Copulation Time

4. Genome Features of “Dark-Fly”, a Drosophila Line Reared Long-Term in a Dark Environment

5. Dogs are sensitive to small variations of the Earth’s magnetic field

6. Christmas 2013: Research: The survival time of chocolates on hospital wards: covert observational study

8. Searching the Internet for evidence of time travelers

10. Were James Bond's drinks shaken because of alcohol induced tremor?
Social Bookmarking

Articles about articles?

1. How to Choose A Good Scientific Problem
2. Whitesides’ Group: Writing a paper
3. Error Bars in Experimental Biology
4. Why most published research findings are false: Author’s reply to Goodman and Greenland
6. Building Theories from Case Study Research
7. Import citations into your digital library using the Mendeley Web Importer
10. Why most published research findings are false
Myth: We read what we click on
55% of viewers spend less than 15 seconds actively on a page

Myth: The more we share, the more we read
There is no relationship whatsoever between the amount a piece of content is shared and the amount of attention the average reader will give that content

http://time.com/12933/what-you-think-you-know-about-the-web-is-wrong/
New Incentives

Does marketing become a core activity?
Custom Metrics
Different Stakeholders, Different Needs

• Funding Body Grants Officer judging candidates

• Graduate Student overwhelmed by the Literature

• Researcher tracking potential misuse of controversial results

• University Development Office seeking donors

• Librarian managing acquisitions—what subjects interest campus researchers
Thank You!

David Crotty  
Senior Editor, Oxford University Press  
david.crotty@oup.com  
April 21, 2015