
Altmetrics: Finding Meaningful Needles in the Data Haystack

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New Metrics

How do we measure researcher performance?



New Metrics

Life After Publication

OXFORD
UNIVERSITY PRESS

The screenshot shows a user profile on Impactstory. At the top, there's a red 'Impactstory' logo with a white 'i'. To the right are 'Sign up' and 'Log in' buttons. Below the logo is a placeholder profile picture for 'David Crotty'. His name is displayed prominently in large, bold, dark grey font. Underneath his name is a small green ORCID icon. To the right of his name is a 'Open Access' button with a lock icon. Below his name, it says '6 research products'. To the right of this are 'Embed' and 'Download' buttons. A horizontal line separates this from the article list. The first article listed is 'Dynamic in vivo imaging of postimplantation mammalian embryos using whole embryo culture.' It includes a small thumbnail image, a 'highly cited' button, and a 'highly saved' button. Below the article title is the citation '(2002) Jones, Crotty, Kulesa et al.. *Genesis* (New York, N.Y. : 2000)'. The second article listed is 'Expression of the murine Hoxa4 gene requires both autoregulation and a conserved retinoic acid response element.' It includes a small thumbnail image, a 'highly cited' button, and a 'highly saved' button. Below the article title is the citation '(1998) Packer, Crotty, Elwell et al.. *Development* (Cambridge, England)'. The third article listed is 'Sequences 5' of the homeobox of the Hox-1.4 gene direct tissue-specific expression of lacZ during mouse development.' It includes a small thumbnail image, a 'highly cited' button, and a 'highly saved' button. Below the article title is the citation '(1993) Behringer, Crotty, Tennyson et al.. *Development* (Cambridge, England)'. At the bottom right of the page is a small orange square icon with a white megaphone symbol.

Impactstory

David Crotty

ORCID

Open Access

6 research products

Embed Download

Article

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

(2002) Jones, Crotty, Kulesa et al.. *Genesis* (New York, N.Y. : 2000)

highly cited **highly saved**

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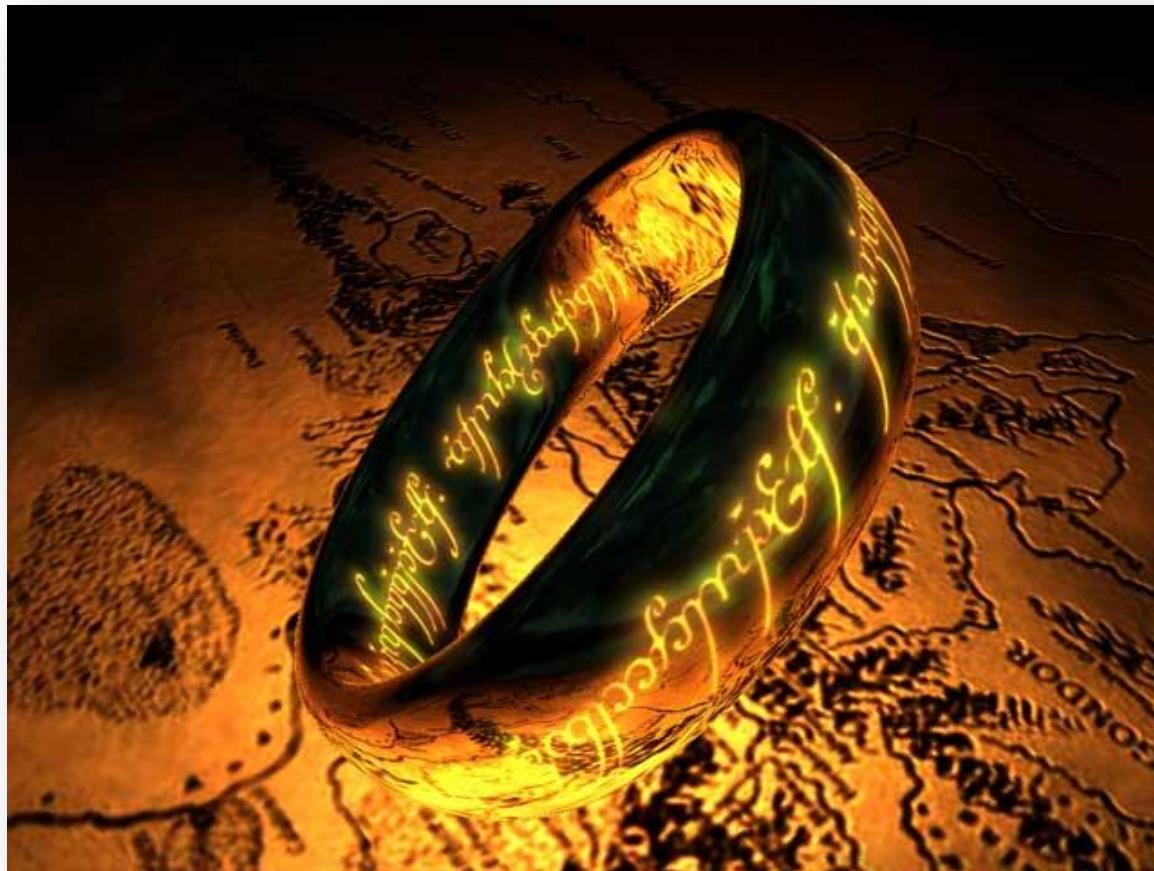
Why Metrics?

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

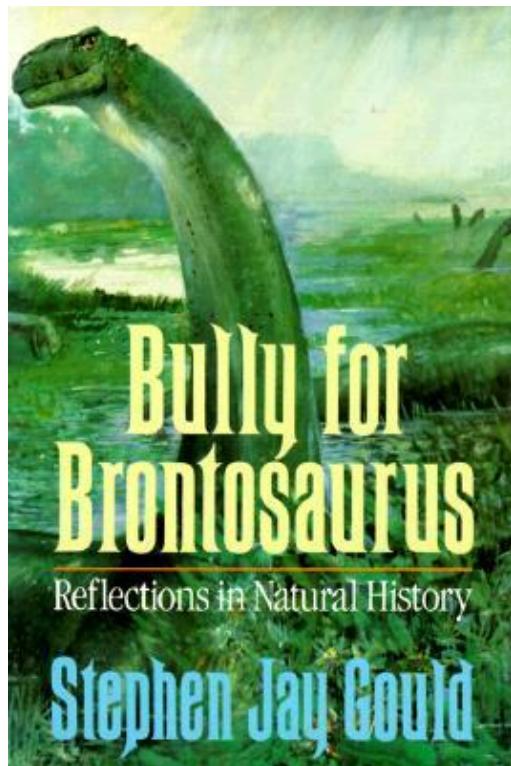
New Metrics

Separating Signal from Noise



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.”

New Metrics

1963 text “Informal Sociology: A Casual Introduction to Sociological Thinking”



“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?



Usage

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?

The screenshot shows the Mendeley website interface. At the top, there is a red logo consisting of three overlapping circles and the word "MENDELEY" in red capital letters. Below the logo, there is a navigation bar with the word "Papers" on the left and two buttons on the right: "Popular" (which is highlighted in blue) and "Latest". The main content area displays a list of ten articles, each with a red number followed by the article title. The titles are: 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, and 10. Why most published research findings are false.

- 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

What You Think You Know About the Web Is Wrong

Myth: We read what we click on

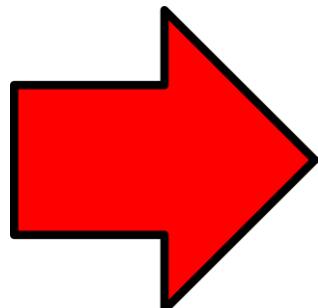
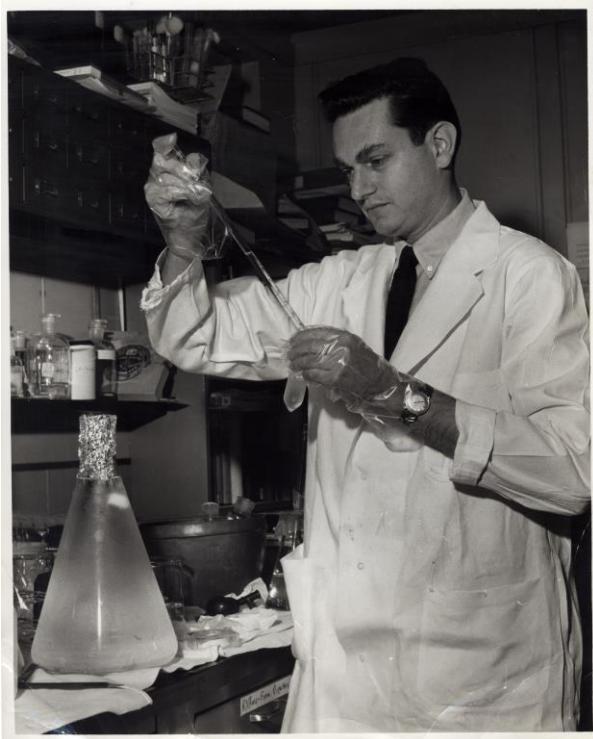
55% of viewers spend less than 15 seconds actively on a page

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

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!

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