

Altmetrics & gaming

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STM Publication Ethics & Research Quality

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A quick reminder (or primer)

Altmetrics help people get credit where credit is due.

Articles (&
some books)

Scholarly
influence



	Articles & books	Datasets	Software
Quality	✓	✓	✓
Attention	✓	✓	✓
Impact	✓	✓	✓

“My research receives a lot of attention.”

The image shows a screenshot of a Mendeley paper page and a tweet. The Mendeley page is for the paper "PhyloSift: phylogenetic analysis of genomes and metagenomes" by Aaron E Darling, Guillaume Jospin, Eric Lowe, Frederick a Matsen, Holly M Bik, Jonathan a Eisen. It includes a "Readership Statistics" section with a bar chart showing 200 readers on Mendeley, broken down by discipline (50% Biological Sciences, 2% Environmental, 1% Computer and), academic status (18% Ph.D. Student, 8% Post Doc, 7% Student (Master's)), and country (8% United States, 2% Canada, 2% New Zealand). The tweet from [robot emoji] (@stillicides) says: "If, like me, you're not quite sure what's happening today with the NHS, this lays it out very clearly. [bmj.com/content/346/bm...](https://www.bmj.com/content/346/bm...)"

Mendeley Paper Details:

- Title:** PhyloSift: phylogenetic analysis of genomes and metagenomes.
- Authors:** Aaron E Darling, Guillaume Jospin, Eric Lowe, Frederick a Matsen, Holly M Bik, Jonathan a Eisen
- Journal:** PeerJ (2014)
- Volume:** 2, Pages: e243
- ISSN:** 2167-8359
- ISSN (Electronic):** 2167-8359
- DOI:** 10.7717/peerj.243
- PubMed:** 24482762

Readership Statistics:

- 200 Readers on Mendeley**
- by Discipline:** 50% Biological Sciences, 2% Environmental, 1% Computer and
- by Academic Status:** 18% Ph.D. Student, 8% Post Doc, 7% Student (Master's)
- by Country:** 8% United States, 2% Canada, 2% New Zealand

Abstract:

Like all organisms on the planet, environmental microbes are subject to molecular evolution. Metagenomic sequencing provides a means to access the sequence of uncultured microbes. By combining DNA sequencing of microbial communities with evolutionary modeling and phylogenetic analysis we reveal new insights into microbiology and also provide a basis for practical tools for forensic pathogen detection. In this work we present an approach to leverage phylogenetic analysis of metagenomic sequence data to conduct several hypothesis tests for the presence of an organism in a sample. Second, we mean to compare community structure across a collection of many samples to develop direct associations between the abundance of certain organisms and sample metadata. Third, we apply new tools to analyze the phylogenetic microbial communities and again demonstrate how this can be associated with metadata. These analyses are implemented in an open source software called PhyloSift. As a pipeline, PhyloSift incorporates several other programs including LAST, HMMER, and pplacer to automate phylogenetic analysis.

Tags: GPLv3, metagenome, metagenome marker binning, mg, microbiome, OTU free, perl, phyloSift

Tweet:

[robot emoji] (@stillicides)

If, like me, you're not quite sure what's happening today with the NHS, this lays it out very clearly. [bmj.com/content/346/bm...](https://www.bmj.com/content/346/bm...)

11 Likes

RETWEETS: 25 FAVORITES: 12

6:59 AM - 1 Apr 2013

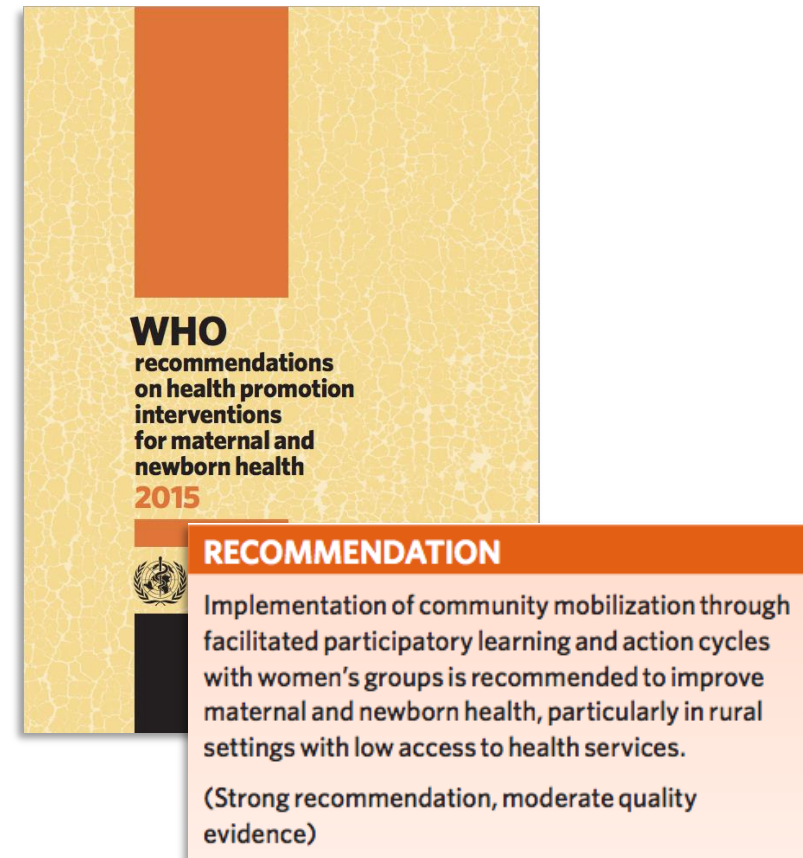
“My research is of high quality.”

The image displays two overlapping screenshots from the F1000Prime platform. The left screenshot shows a 'PRE-PUBLICATION REVIEW OF' for the article 'PhyloSift: phylogenetic analysis of genomes and metagenomics'. It indicates the article was reviewed on April 18, 2013, and December 17, 2013, and is marked as 'VERIFIED'. The reviewer is Nicholas Loman, and the merit is 5. The right screenshot shows the article 'Perioperative Bridging Anticoagulation in Patients with Atrial Fibrillation' by Douketis JD, Spyropoulos AC, Kaatz S, Becker RC, Caprini JA, Dunn AS, Garcia DA, Jacobson A, Jaffer AK, Kong DF, Schulman S, Turpie AG, Hasselblad V, Ortel TL, and the BRIDGE Investigators. The article is rated '5' (Exceptional) and has a 'CHANGES CLINICAL PRACTICE' badge. The abstract states: 'In patients with atrial fibrillation undergoing elective surgery or other invasive procedures, a non-bridging strategy should be used.' A callout box points to the 'Exceptional' rating and the 'CHANGES CLINICAL PRACTICE' badge.

CHANGES CLINICAL PRACTICE - In patients with atrial fibrillation undergoing elective surgery or other invasive procedures, a non-bridging strategy should be used.

“My research has an impact upon the world.”

- Contribution to the knowledge base
- Change in understanding of a disease, disorder or condition
- Implementation of policy or legislation
- Change in clinical or research practice
- Enhancement of community health
- Economic benefits



Why do people care?

Netherlands

Part 3 Section 3: Impact template and case studies (REF3a/b)

Definition of impact for the REF

140. For the purposes of the REF, impact is defined as an effect on, change or benefit to the economy, society, culture, public policy or services, health, the environment or quality of life, beyond academia (as set out in paragraph 143).

141. Impact **includes**, but is not limited to, an effect on, change or benefit to:

- the activity, attitude, awareness, behaviour, capacity, opportunity, practice, process or
- of an audience, benefit, constituency, organ
- in any geographic location, regionally, nationally

142. Impact **includes** the harm, risk, cost or other n

2 *Relevance to society*

The committee assesses the quality, scale and relevance of contributions targeting specific economic, social or cultural target groups, of advisory reports for policy, of contributions to public debates, and so on. The point is to assess contributions in areas that the research unit has itself designated as target areas.

When evaluating NSF proposals, reviewers will be asked to consider what the proposers want to do, why they want to do it, how they plan to do it, how they will know if they succeed, and what benefits could accrue if the project is successful. These issues apply both to the technical aspects of the proposal and the way in which the project may make broader contributions. To that end, reviewers will be asked to evaluate all proposals against two criteria:

- **Intellectual Merit:** The Intellectual Merit criterion encompasses the potential to advance knowledge; and
- **Broader Impacts:** The Broader Impacts criterion encompasses the potential to benefit society and contribute to the achievement of specific, desired societal outcomes.

UK

USA

Reputation

- Build your personal brand as a researcher
 - Competition for grants, positions is tough
 - Finding collaborators can be a bit of a crapshoot
 - Equivalent of conference networking, but without the travel budget
- You can do this online, offline or both, but if you don't do it at all your career will suffer
- Promoting your own work (speaking, poster sessions, online) is part of this

What is gaming?

A question for you – is this gaming? (1/4)

- Alice has a new paper out. She tweets about it, and twenty of her (non-academic) friends retweet her in support.

What about... (2/4)

- Alice has a new paper out. She tweets about it. HootSuite automatically posts all of her tweets to Facebook and Google+.
- Alice has a new paper out. She writes about it on her lab's blog and sends an email highlighting it to a colleague who reviews for Faculty of 1000.

What about... (3/4)

- Alice has a new paper out. She asks her colleagues to share it via social media if they think it'd be useful to others.
- Alice has a new paper out. She asks those grad students of hers who blog to write about it.

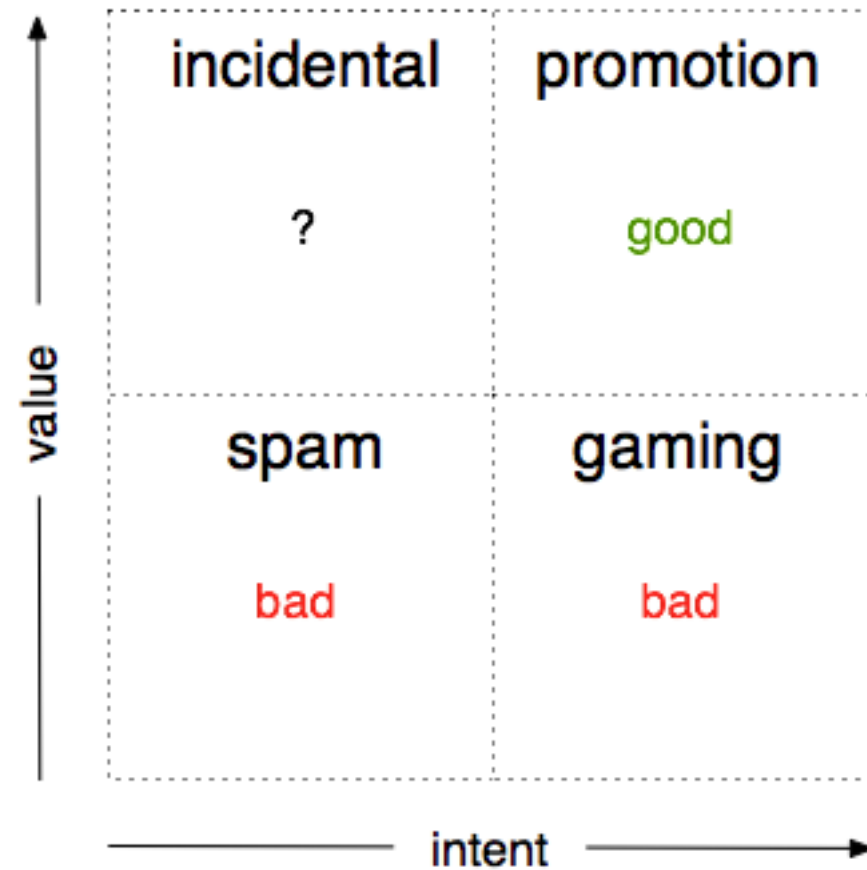
Or finally... (4/4)

- Alice has a new paper out. She believes that it contains important information for diabetes patients and so pays for an in-stream advert on Twitter.
- Alice has a new paper out. She believes that it contains important information for diabetes patients and so signs up to a '100 retweets for \$\$\$' service.

This is the unacceptable one, for us

- Alice has a new paper out. She believes that it contains important information for diabetes patients and so **signs up to a '100 retweets for \$\$\$' service.**

One framework for deciding – value & intent




Promotion

- aka marketing your work
- Is the intent to promote the article, rather than game the numbers?
- Is there some modicum of value added – an audience reached, a question answered?
- If “yes” to these then it’s legitimate







Incidental




Microcystis Aeruginosa and Underwater Light Attenuation in a Hypertrophic Lake (Hartbeespoort Dam, South Africa)

Twitter Score Demographics


So far Altmeter has seen **34** tweets from **1** accounts.


	Hartbeespoort Dam @Hartbeespoort Dam 193 followers	I am 97.588% full. Microcystis aeruginosa and underwater light attenuation in a hypertrophic... http://t.co/Ni3up8AfU0 #harties	23-Mar-2013
	Hartbeespoort Dam @Harties_dam 193 followers	I am 98.984% full. Microcystis aeruginosa and underwater light attenuation in a hypertrophic... http://t.co/3RyYnnha #harties	08-Feb-2013
	Hartbeespoort Dam @Harties_dam 193 followers	I am 97.610% full. Microcystis aeruginosa and underwater light attenuation in a hypertrophic... http://t.co/3RyYnnha #harties	14-Feb-2013
	Hartbeespoort Dam @Harties_dam 193 followers	I am 97.074% full. Microcystis aeruginosa and underwater light attenuation in a hypertrophic... http://t.co/3RyYnnha #harties	15-Feb-2013

Mentioned by

 1 tweeters

Readers on

 0 Mendeley

 1 CiteULike

Track this article

- Get email updates when this article is shared

Incidental

- No intent to game, but little value (in terms of attention or influence)
- There are blogs out there that publish every abstract from articles matching certain MeSH terms, and Twitter accounts that retweet by keyword.

Gaming

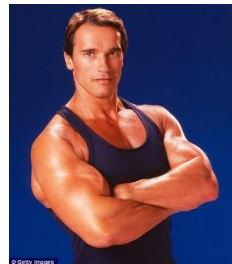
- Where there's an intent to boost numbers – but without adding the requisite value – it's gaming.

Gaming – our experience

- It's very rare (for now)
- It's very hard to distinguish from spam – intent is difficult to detect
- The most common method is paying for tweets
- It's generally very easy (for now) for humans to spot
 - One heuristic: how many pictures of gold bars, muscular men and ladies in bikinis are in the profile pictures of the people sharing this work



+



+



= probably gamed

A couple of tangents...

Quis custodiet ipsos custodes?

- What if a journal overhypes a research study to get more views or news pickup?
- "Exaggeration in news is strongly associated with exaggeration in press releases"



thebmj Research ▾ Education ▾ News & Views ▾ Campaigns Archive

Research

The association between exaggeration in health related science news and academic press releases: retrospective observational study

BMJ 2014 ; 349 doi: <http://dx.doi.org/10.1136/bmj.g7015> (Published 10 December 2014)
Cite this as: *BMJ* 2014;349:g7015

Who decides what adds value?

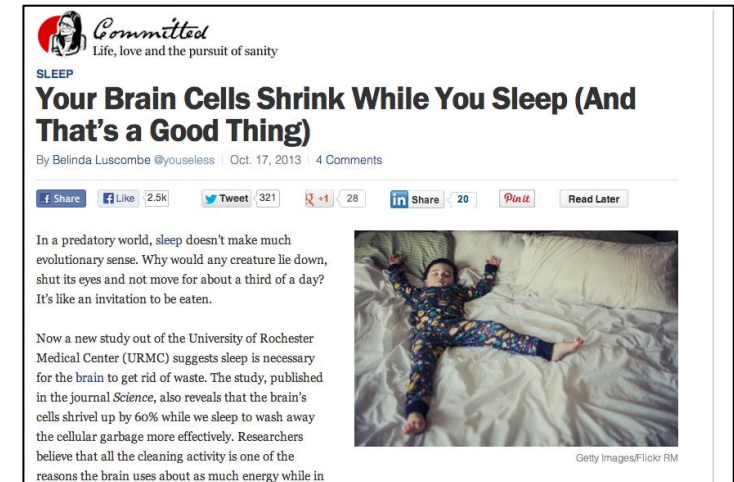
- We manually curate a list of news and blog sources to track



The screenshot shows the BBC News Health website. The main headline is "Sleep 'cleans' the brain of toxins" by James Gallagher, dated 17 October 2013. The article features a large image of a man's head with a glowing brain scan overlay. The page includes a "Top Stories" section with links to "Go home' vans not good idea - May", "Syria talks 'must bolster moderates'", "Why Beckham had to go - Ferguson", "Girl removed from Dublin Roma family", and "Energy bosses called before MPs". There is also a "Features" section with "Bleak odyssey", "Frosty reception", "Outfoxed", and "Gods of baking". A "Most Popular" section is at the bottom with "Shared Read Video/Audio" options.



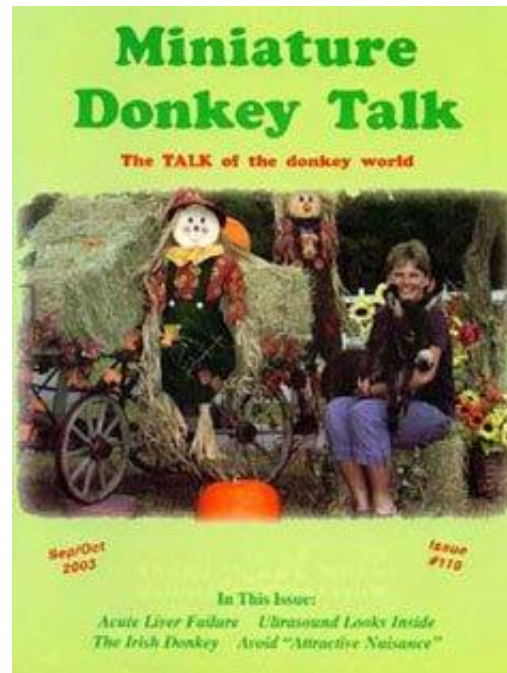
The screenshot shows the The Guardian Science page. The main headline is "Why do we sleep? To clean our brains, say US scientists" by Ian Sample, dated Friday 18 October 2013 10.11 BST. The article features a large image of a woman and a child sleeping together. The page includes a "Share" section with 2407 shares, 386 tweets, 339 +1s, 37 pins, and 126 shares. There is also an "Article history" section and a "More on this story" section with a link to "Skull of Homo erectus throws story of human evolution into disarray".



The screenshot shows a blog post from "Committed" titled "Your Brain Cells Shrink While You Sleep (And That's a Good Thing)" by Belinda Luscombe, dated Oct. 17, 2013. The article features a large image of a child sleeping in a bed. The text discusses the evolutionary sense of sleep and the benefits of brain cell shrinkage during sleep. The page includes a "Share" section with 2.5k likes, 321 tweets, 28 +1s, and 20 shares. There is also a "Read Later" button and a "More on this story" section with a link to "Skull of Homo erectus throws story of human evolution into disarray".

Who decides what adds value?

- Choosing what to track is subjective – and potentially introduces bias



Dealing with gaming

Security through obscurity

- Being open about weaknesses may be a good incentive for us and others to come up with solutions
- But realistically, if you're determined to game the system you're probably going to be more agile than tool providers
- So in general, people stay quiet about exactly how they detect gaming (and spam)

How we spot gaming

- We flag up any unusual activity
 - More attention than expected
 - Concentration of attention in one or two sources
 - Suspicious co-tweeting
- We have some automated processes that look at flagged articles in more detail
- We then inspect the relevant mentions data manually

How can we penalize gaming?

- Right now we report to the journal
- but I have never heard of it going further
- We then remove the relevant mentions
- Sometimes we will “freeze” the article and not collect anything new for it



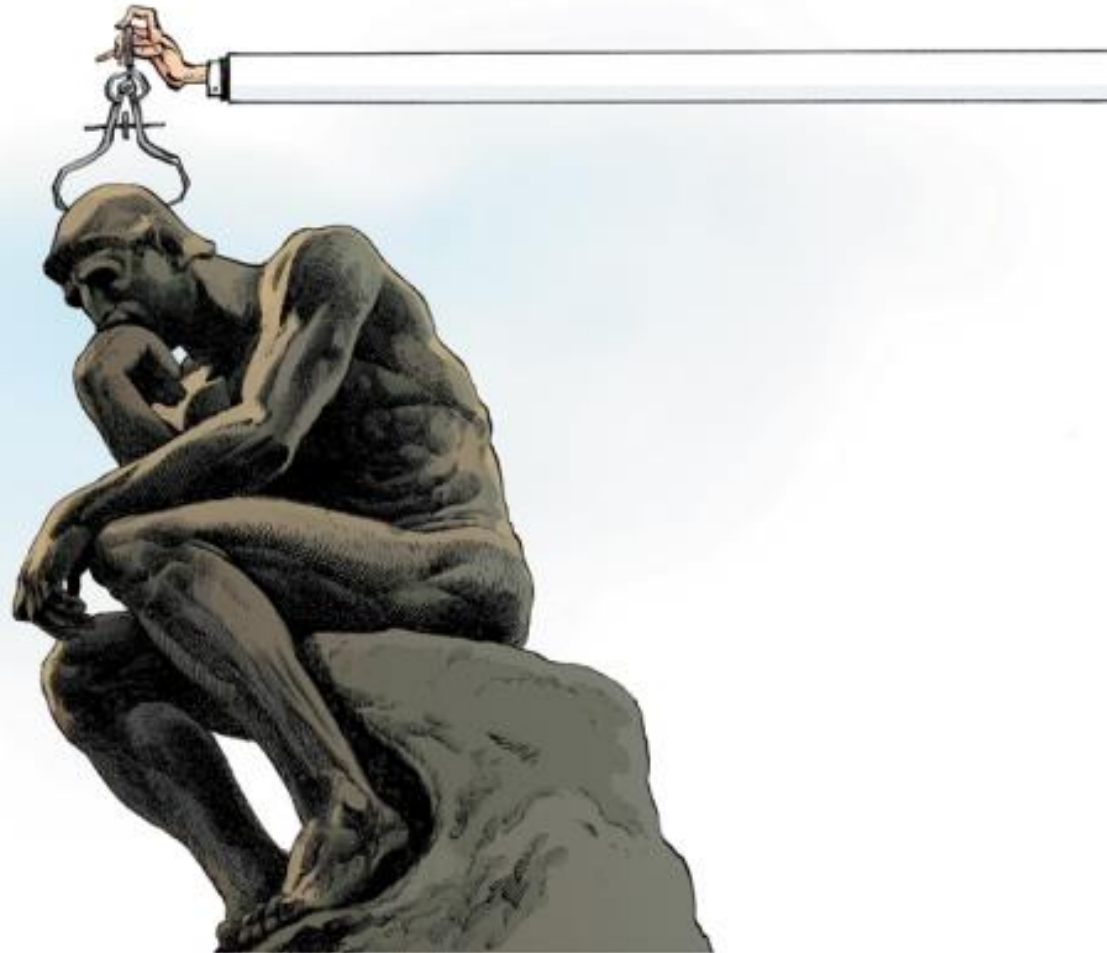
Innocent until proven guilty?

- Should we suspend all metrics or display a warning on suspected articles, until they are investigated and cleared?
- What if we're wrong, and it hurts an author's reputation?
- Could it be used as a weapon by an author's competitors?

Prevention is better than cure

- Use a “basket of metrics” which allows you to spot strange patterns confined to one or two more gameable sources
- Ensure that the mentions collected are available to view – don’t just provide numbers
 - Most of the funders mentioned earlier ask for case studies and qualitative data rather than pure metrics
- Provide a framework for interpreting the mentions data, and advice on how to use it

Good practice is as important as good data



Thanks!
Your thoughts and questions are
very welcome.

@stew / @altmetric