### **Altmetrics:**

The next step for open access

@jasonpriem

SPARC Japan Seminar 2013 Tokyo, Japan

# Open access is essential.

# But it's only the first step.

Online journals are paper journals delivered by faster horses.

Instead of moving paper products faster, we can create web-native science.

# conversation stories analysis data

# data



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#### **Dataset**

Package

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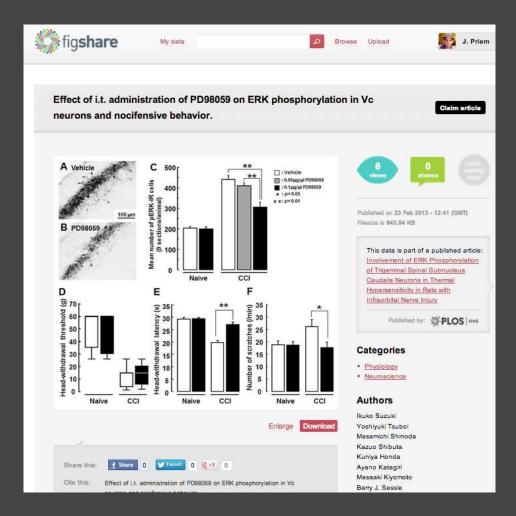
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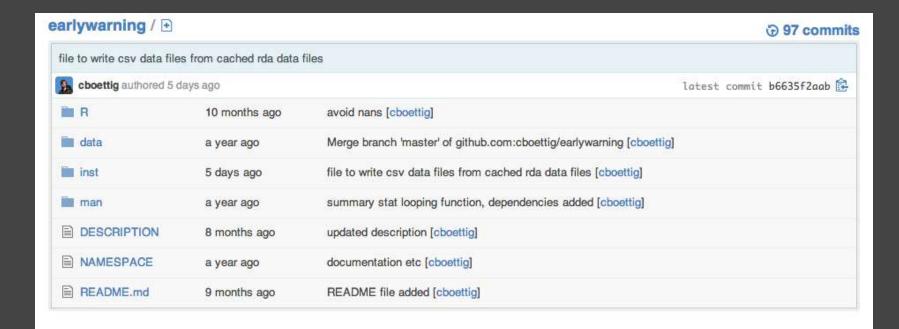
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Scientific Names Primates

Contained in Data Data from: The evolution



# analysis



#### README.md

#### **Quantifying the Detection of Early Warning Signals**

This package contains the source code, analysis, and history of my research published in the Proceedings of the Royal Society Interface, *Limits to the Detection of Early Warning Signals for Critical Transitions* with Alan Hastings, May 2012. A preprint under CC-by license is freely available from my website

- · Author: Carl Boettiger
- · License: CC0
- Project navigation

# stories

fiction: short story, novella, novel, series, play, film, comic book, etc, etc...

scholarship:
paper, monograph,
video, blog posts, notebooks, infographics,
slides, etc, etc

# conversation



Unanswered

How many proofs that  $\pi_n(S^n) = \mathbb{Z}$  are there?



Offhand I can think of two ways in classical homotopy theory:

1. Show that  $\pi_k(S^n) = 0$  for k < n by deforming a map  $S^k \to S^n$  to be non-surjective, then contracting it away from a point not in its image. Now use the Hurewicz theorem to show  $\pi_n(S^n) = H_n(S^n) = \mathbb{Z}$ , which is easy to calculate with cellular homology.



2. Use the Freudenthal suspension theorem to induct up from  $\pi_1(S^1) = \mathbb{Z}$ , which you can prove using (say) the universal covering space  $\mathbb{R} \to S^1$ .

What other ways are there to prove  $\pi_n(S^n) = \mathbb{Z}$ ?

at.algebraic-topology

homotopy-theory

flag | cite

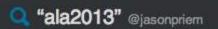
edited Feb 8 at 8:53

Ricardo Andrade

community wiki

- this should be community wiki Koushik Feb 8 at 0:43
  - A very silly option is: run an algorithm which given a simplicial decomposition of the sphere gives you the group. As algorithm exist, this is in principle viable :-) - Mariano Suárez-Alvarez Feb 8 at 2:39
- Am I allowed to say "countably many"? ;-) Andrej Bauer Feb 8 at 11:31
- @Tom: Is there a way to generalize that argument to n > 2? Mike Shulman Feb 8 at 16:31
- The deformation argument in (1) is superfluous. Just calculate  $\pi_1$  and  $H_*$  from the cell decomposition. Then for simply connected spaces, Hurewicz shows that the minimum i > 0 for which  $H_i \neq 0$  is the same as the minimum i > 0 for which  $\pi_i \neq 0$ , and that the groups coincide for this i. – unknown (google) Feb 9 at 21:53

show 3 more comments





Lori Hancock @OnceUponARun... 8m @kaaauthor congrats again!!! Loved this book before it won & I'm so happy that so many more people of all ages will read it! #ala2013

Conversation



Emily J. Hurst @hurstel \*This is the future and you are going to have to be cool with it!" #ala2013 Mobile technology and ereaders in schools. Love it!

Details



Casey O'Leary @Itbloomlib There was holy silence in the room as Alice Walker shared her work. Unforgettable, #ala2013

Details





Ann Verleye retweeted



American Libraries @amlibraries 25m 40 great apps for mobile reference and outreach, #ala2013: bit.ly/11Z7AcZ

Details



Lisa Rabey @pnkrcklibrarian Goodbye Internet! We love youuuuuiuuiuu. (And you too #ALA2013!!)

Details



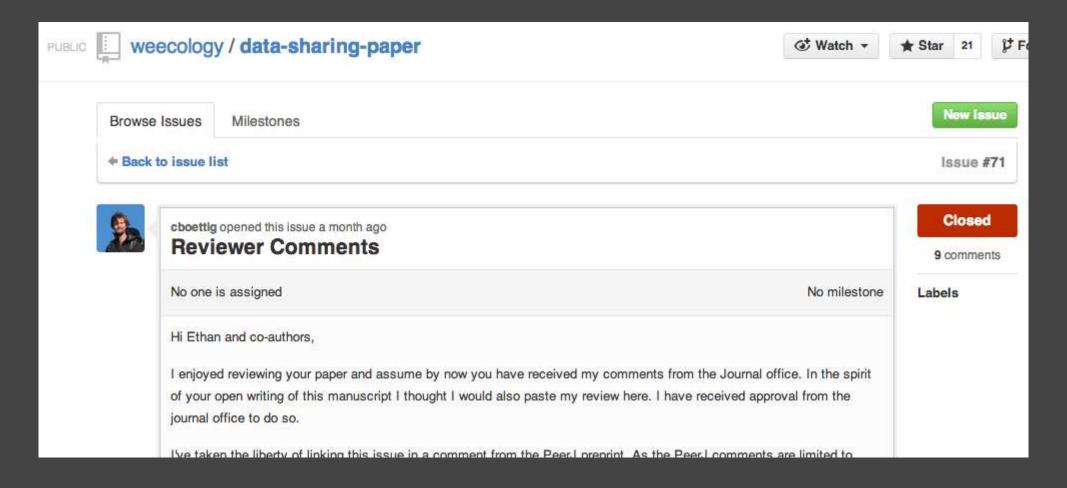
Kate Rudd @katerudd I see you, ALA. #ala2013 instagram.com/p/bPJ4M7lbAK/

Details

10

8m

# conversation

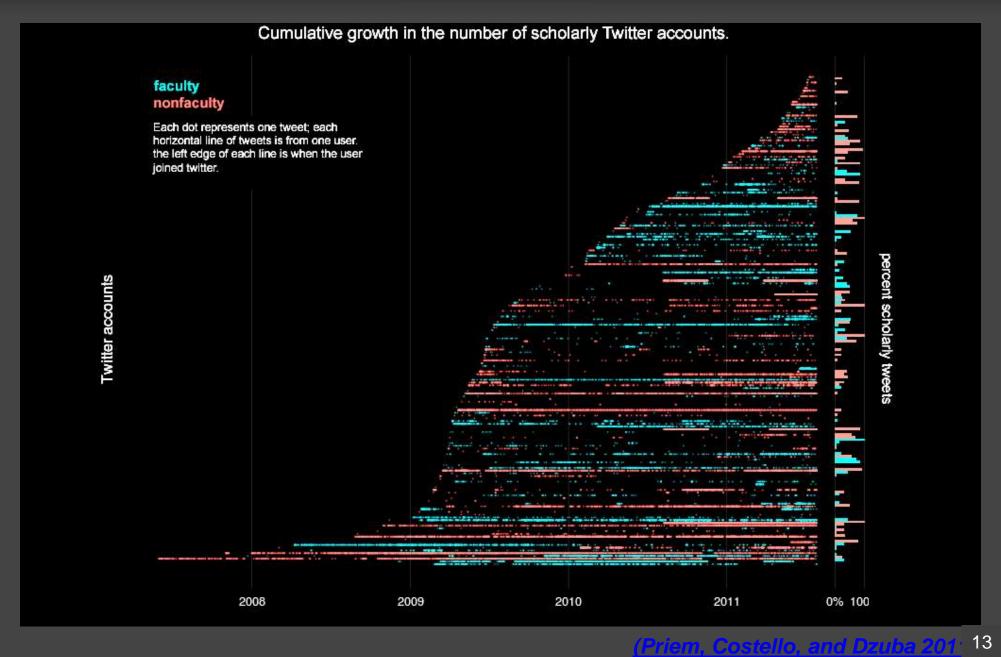


## Examples: Twitter

In one month, over **58k citations** from Twitter to scholarly articles (citwaitions?)

It is like having a jury preselect what will probably interest you.... Occasionally there will be something that people will link to, and it will change what I think, or what I'm doing, or what I'm interested in.

## Examples: Twitter



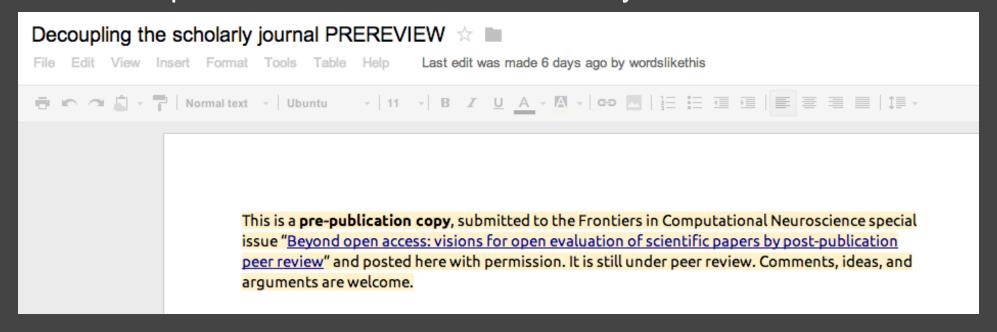
Web-native science means we can start making public, not merely "Publishing."

# Here's my journal:



# Here's how I publish:

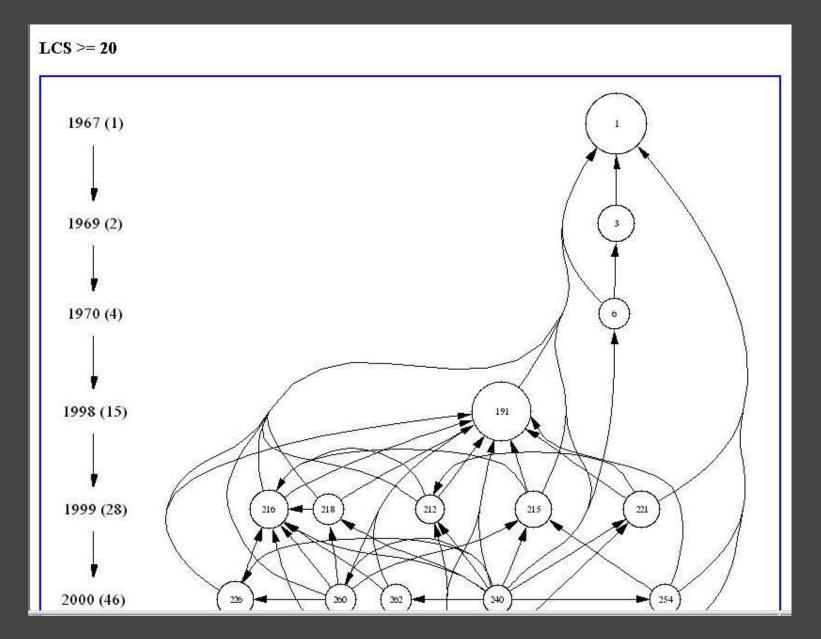
#### The Decoupled Journal article: a case study.



# But how do we filter? How do we measure?

# The old way: countin' citations

# And that's awesome!



# But citations only tell part of the story

Spotting emerging research fronts will require tracking "formal and informal communication" (Kuhn, 1977)

Heart of scholarly communication is "visits, personal contacts, and letters." (Bernal, 1944) "...there are undoubtedly highly useful journals that are not cited frequently."
(Garfield, 1972)

### Impact has multiple dimensions:

Audience: scholars, public

Engagement type:

views, discussion, saves, citation, recommendation

## Impact has multiple dimensions:

	scholarly	public
recommended		
cited		
discussed		
saved		
read		

### Bibliometrics measures citation

	scholarly	public
recommended		
cited	traditional citation	
discussed		
saved		
read		

## Altmetrics measures impact:

	scholarly	public
recommended	faculty of 1000	popular press
cited	traditional citation	wikipedia
discussed	scholarly blogs	blogs, twitter
saved	mendeley, citeulike	delicious
scholarly	pdf views	html views

Bibliometrics mined impact on the first scholarly Web.

# altmetrics mines impact on the next one.

# Impact Story.

An open-source, nonprofit startup to gather and share altmetrics.

Heather Piwowar

Jason Priem



#### ImpactStory.

create about follow register



login

#### My Collection

9 items (expand all) update json csv yTweet 0

#### article

Mega-phylogeny approach for comparative biology: an alternative to supertree and supermatrix approaches ☺

(2009) Smith, Beaulieu, Donoghue BMC Evol Biol

Computational toxicology using the OpenTox application programming interface and Bioclipse. (2011) Willighagen, Jeliazkova, Hardy et al. BMC research notes

Multistep correlations via covariance processing of COSY/GCOSY spectra: opportunities and artifacts

(2008) Martin, Hilton, Blinov et al. Magn. Reson. Chem.

Automated dielectric single cell spectroscopy - temperature dependence of electrorotation © (2002) Mietchen, Schnelle, Muller et al. Journal of Physics D: Applied Physics

Pyramid symmetry transforms: From local to global symmetry ©

(2007) Zavidovique, Di Gesú Image and Vision Computing



#### dataset

Data from: Data archiving is a good investment @

(2011) Piwowar, Vision, Whitlock et al. Dryad Digital Repository



#### artifacts

highly saved

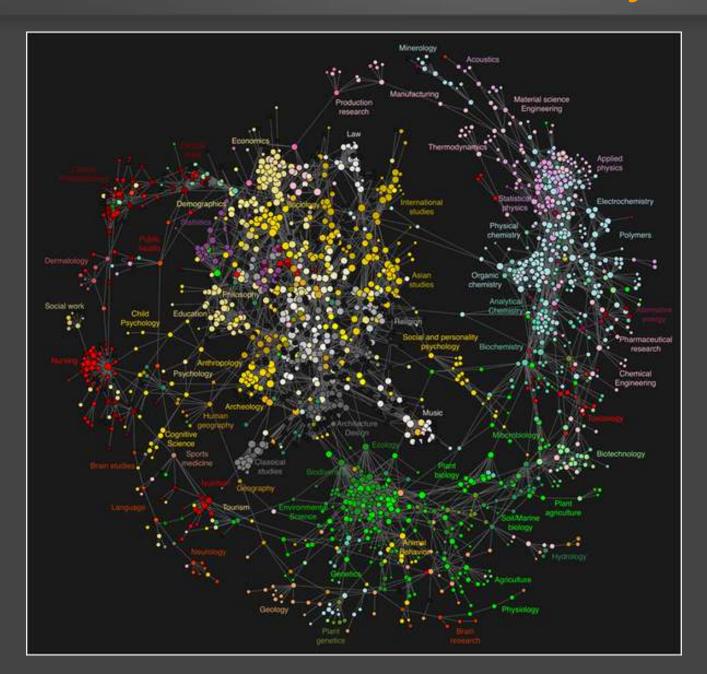
cited

saved

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## The network is the key



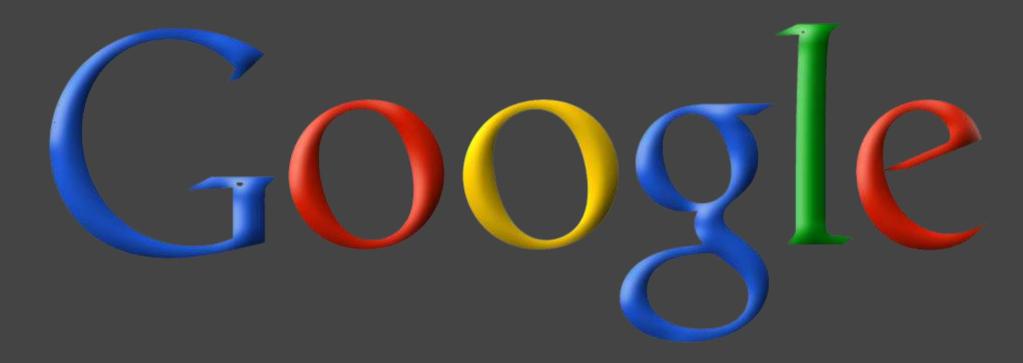
Bollen, J., Van de Sompel, H., Hagberg, A., Bettencourt, L., Chute, R., Rodriguez, M. A., & Balakireva, L. (2009). Clickstream Data Yields High-Resolution Maps of Science. *PLoS ONE*, *4*(3), e4803. doi:10.1371/journal.pone.0004803

# At web scale, the value isn't in manual curation...



(ask these guys)

# It's in mining the network



(ask these guys)

# OA is just the beginning



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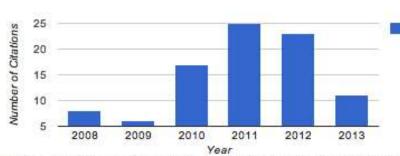


David M. Ceperley, University of Illinois at Urbana-Champaign -Contributions: 51

RMRLS 0.2 - in Downloads



Roehrig, A. D., Petscher, Y., Nettles, S.M., Hudson, R.F., & Torgesen, J.K. (2008). Not just speed reading: Accuracy of the DIBELS oral reading fluency measure for predicting high-stakes third grade reading comprehension outcomes. Journal of School Psychology, 46, 343-366.



ImpactStory.

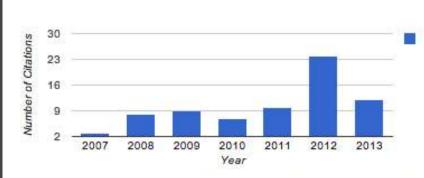
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Hurst, A., Prevatt, F., Petscher, Y., & Proctor, B. (2007). The learning and study strategies of college students with ADHD. Psychology in the Schools, 44, 573-584.





highly saved cited

Catts, H.W. Petscher, Y., Schatschneider, C., Bridges, M.S., & Mendoza, K. (2009). Floor effects associated with universal screening

### The second revolution has started.

Once we have altmetric data, it's too useful to ignore; alternative filters and even certification paths based on this data will open.

As Peter Vinkler says, citation graph data is like Chekhov's gun: once on stage, it has to be fired.

### A wise man, that Chekov.



#### Thanks!

#### Advisors:

- Brad Hemminger,
- Todd Vision

#### Funders:

- Alfred P. Sloan Foundation
- DataONE
- Dryad
- National ScienceFoundation
- Open Society Foundations
- Royster Society of Fellows











### Questions?

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