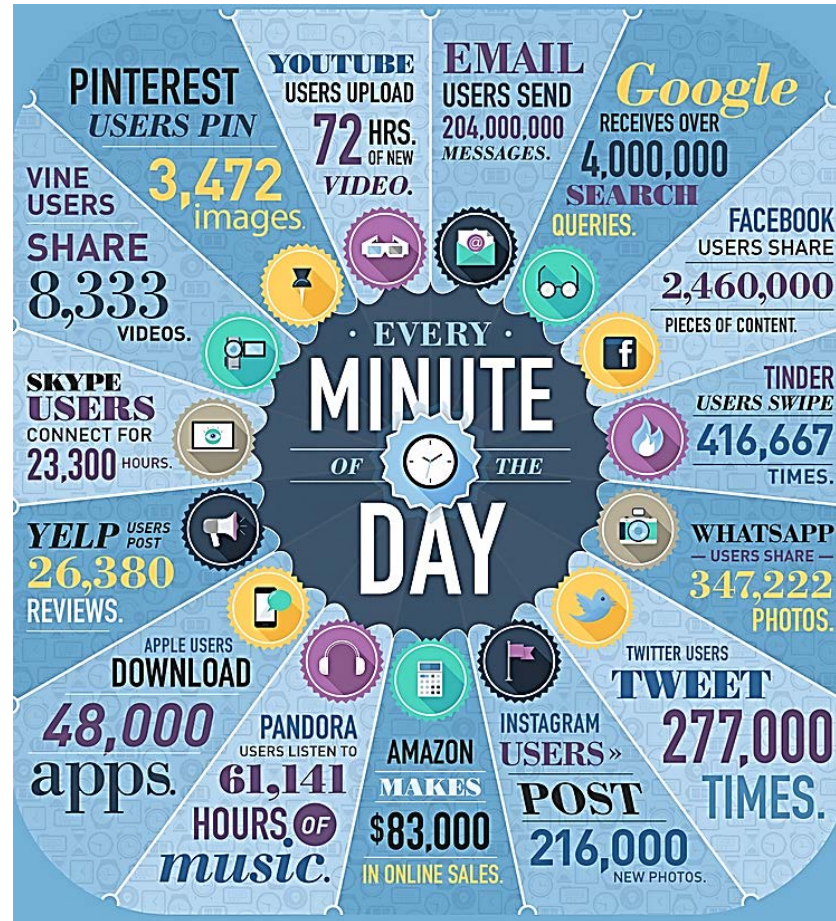

Altmetrics: The democratization of research evaluation?

Professor Dr. Isabella Peters, Web Science

Background I: Social media are ubiquitous



Quelle: <http://www.domo.com/learn/data-never-sleeps->

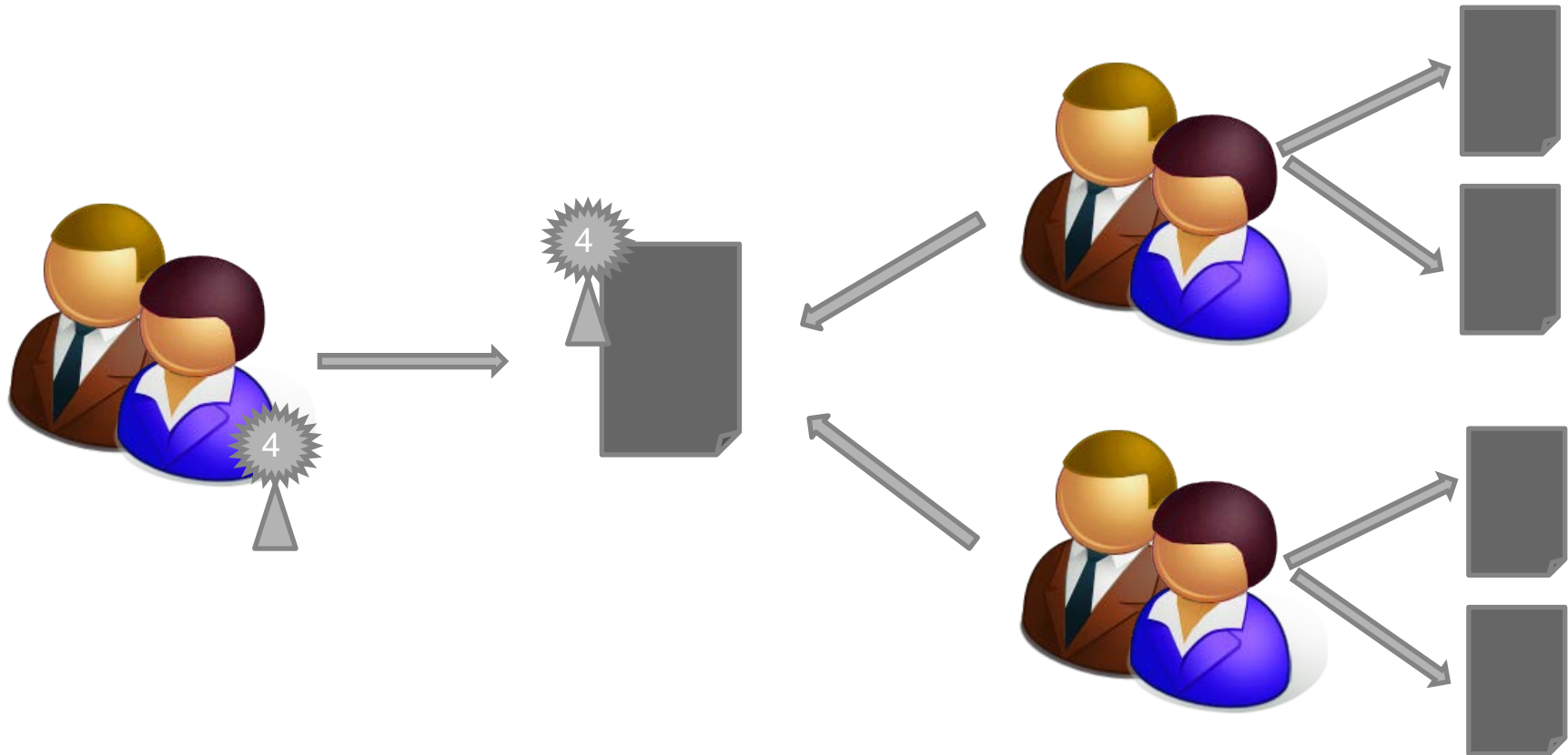
Background II:

Criticism on traditional research evaluation

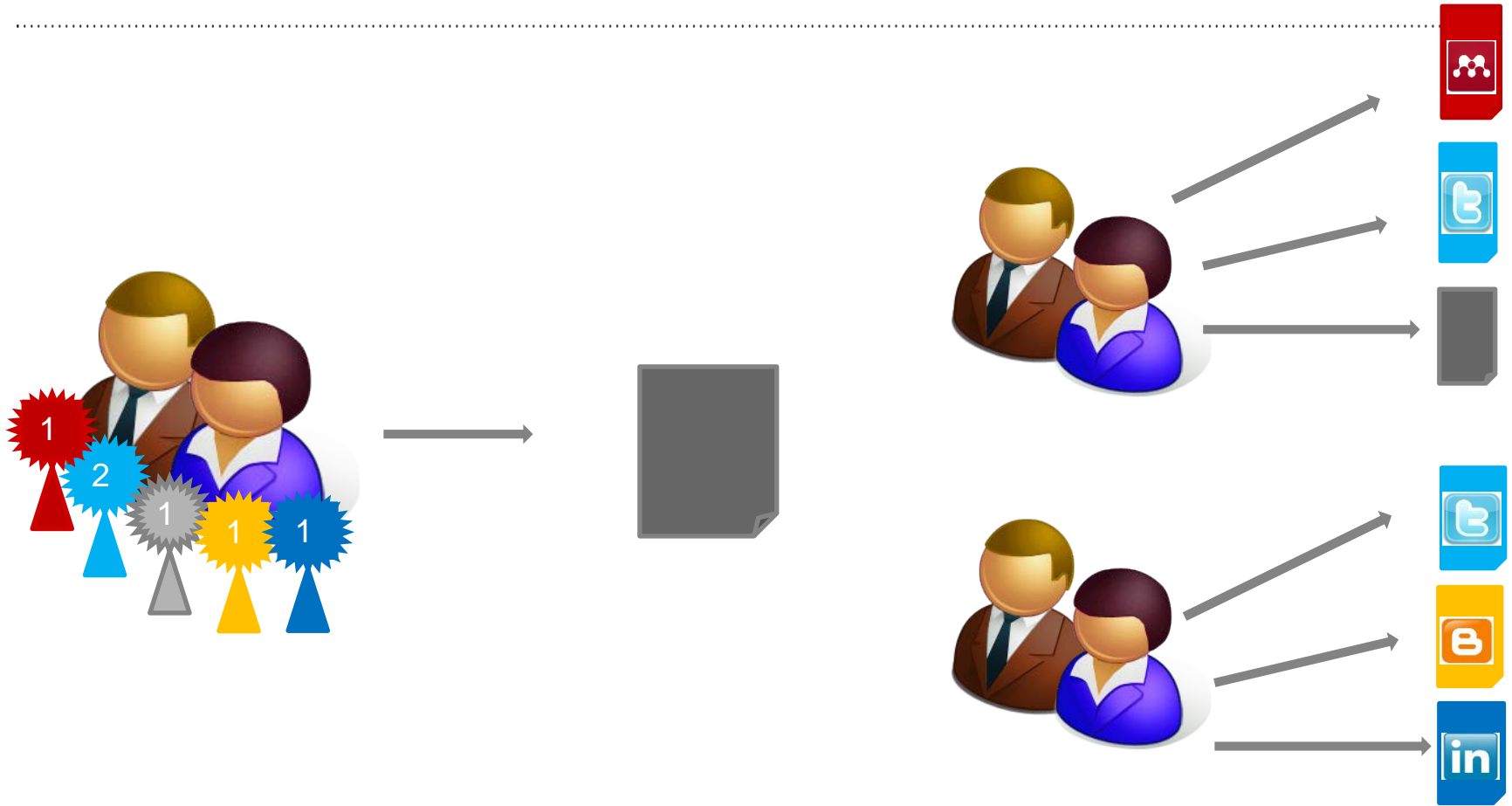
- San Francisco Declaration of Research Assessment (<http://am.ascb.org/dora>)
 - “The declaration intends to halt the practice of correlating the journal impact factor to the merits of a specific scientist's contributions. [...] this practice creates biases and inaccuracies when appraising scientific research. [...] the impact factor is not to be used as a substitute ‘measure of the quality of individual research articles, or in hiring, promotion, or funding decisions’”
 - Altmetrics Manifesto (<http://altmetrics.org/manifesto>)
 - “Altmetrics expand our view of what impact looks like, but also of what’s making the impact. [...] Unlike citation metrics, altmetrics will track impact outside the academy, impact of influential but uncited work, and impact from sources that aren’t peer-reviewed. [...] The speed of altmetrics presents the opportunity to create real-time recommendation and collaborative filtering systems”
-

Defining *metrics

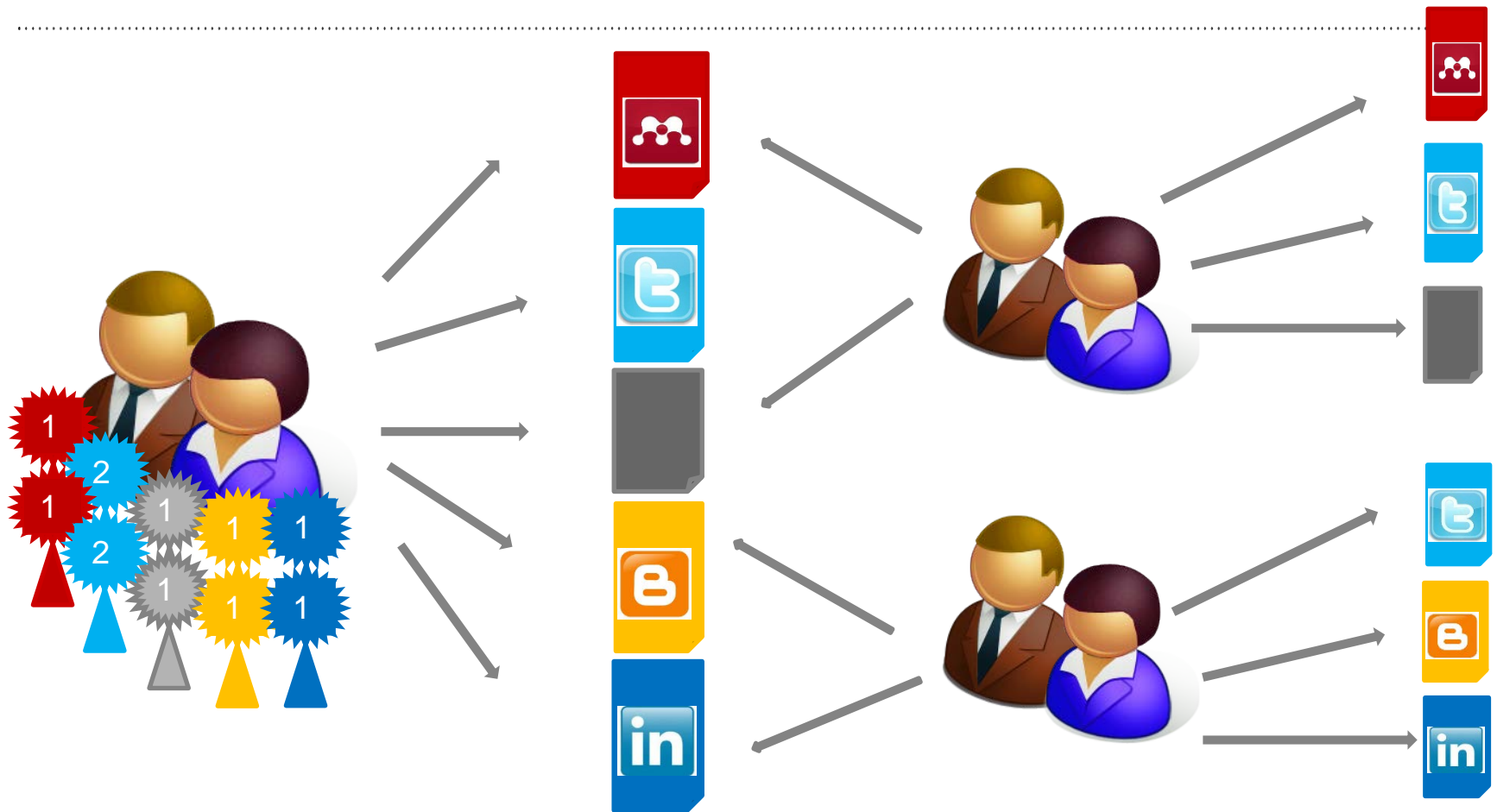
From bibliometrics...



...to altmetrics: narrow definition



...to altmetrics: broad definition



Altmetrics in the wild

Altmetrics in the wild

The image shows a Twitter search interface for the term 'econstor'. The search results are displayed as a list of tweets. A blue arrow points from the first tweet to an inset window showing the corresponding document on the EconStor website.

Search Results:

- Search Term:** econstor
- Section:** Ergebnisse für econstor
- Filter:** Tweets Top / Alle
- Tweet 1:**
 - User:** José Luis Cárdenas T @PepoCardenasT
 - Text:** Buyer power and suppliers' incentives to innovate econstor.eu/bitstream/1041...
 - Action:** Öffnen
- Tweet 2:**
 - User:** Bernardo Batiz-Lazo @BatizLazo
 - Text:** From NEP-HPE: Eucken, Hayek, and the Road to Serfdom bit.ly/WrfNIM #twitterstorains
 - Action:** Öffnen
- Tweet 3:**
 - User:** la Nitpickette @laNitpickette
 - Text:** Study: "Nice guys finish last": ppl w/ higher "#tax morale" taxed more heavily (PDF); econstor.eu/bitstream/1041... #OpMsMTakeOver #ethics

EconStor Document Page (Inset):

- Website:** WWW.ECONSTOR.EU
- Title:** Buyer power and suppliers' incentives to innovate
- Author:** Köhler, Christian; Rammer, Christian
- Category:** Working Paper
- Identifier:** ZEW Discussion Papers, No. 12-058
- Cooperation:** Provided in Cooperation with: ZEW - Zentrum für Europäische Wirtschaftsforschung / Center for European Economic Research
- Citation:** Suggested Citation: Köhler, Christian; Rammer, Christian (2012) : Buyer power and suppliers' incentives to innovate, ZEW Discussion Papers, No. 12-058, <http://hdl.handle.net/10419/66126>
- Terms of Use:**
 - German:** Nutzungsbedingungen: Die ZEW räumt Ihnen als Nutzer/Huber das unentgeltliche, räumlich unbeschränkte und zeitlich auf die Dauer des Schutzrechts beschränkte einfache Recht ein, das ausgewählte Werk im Rahmen der unter <http://www.econstor.eu/produkte/nutzungsbedingungen> nachzulesenden vollständigen Nutzungsbedingungen zu veröffentlichen, mit denen die Nutzer/Huber sich durch die erste Nutzung einverstanden erklärt.
 - English:** Terms of use: The ZEW grants you, the user, the non-exclusive right to use the selected work free of charge, territorially unrestricted and within the time and/or the term of the property rights according to the terms specified at <http://www.econstor.eu/produkte/nutzungsbedingungen> by the first use of the selected work the user agrees and declares to comply with these terms of use.

Altmetrics in the wild: tools

ImpactStory.

article

Synthetic Antitumor Vaccines Containing MUC Domains-Induction of a Strong Immune Response
(2011) Gaidzik, Kaiser, Kowalczyk et al. *Angewandte Chemie International Edition*

A Complex Standard for Protein Identification,
(2012) Vaudel, Burkhardt, Breiter et al. *Journal of Proteome Research*

Dual Function of Sdh3 in the Respiratory Chain of Mitochondrial Inner Membrane
(2011) Gebert, Gebert, Oeljeklaus et al. *Molecular Cell*

Composition and Topology of the Endoplasmic Reticulum
(2011) Stroud, Oeljeklaus, Wiese et al. *Journal of Molecular Biology*

Raf kinases mediate the phosphorylation of eukaryotic cells regulate its stability in eukaryotic cells
(2012) Sanges, Scheuermann, Zahedi et al. *Cell Death and Disease*

Highly anisotropic effective dielectric functions

Webometric Analyst
Plum Analytics
Altmetric.com
Readermeter.org
Datacite.org
Sciencecard.com*
Citedin.org*

...

Altmetrics in the wild: publishers




3,191

VIEWS

615


SHARES


The Welfare Consequences and Efficacy of Training Pet Dogs with Remote Electronic Training Collars in Comparison to Reward Based Training

Jonathan J. Cooper  Nina Cracknell, Jessica Hardiman, Hannah Wright, Daniel Mills

Published: September 03, 2014 • DOI: 10.1371/journal.pone.0102722

Article | About the Authors | **Metrics** | Comments | Related Content

Download PDF  | Print | Share

Discussed 


twitter: 13 | facebook: 602 | Comments: 0 | Google blogs Search

Viewed

Total Article Views		HTML Page Views	PDF Downloads	XML Downloads	Totals
3,191	PLOS	3,034	150	7	3,191
	PMC	0	0	n.a.	0
	Totals	3,034	150	7	3,191
4.94% of article views led to PDF downloads					

Sep 3, 2014 (publication date) through Sep 7, 2014*

CrossMark

Subject Areas 

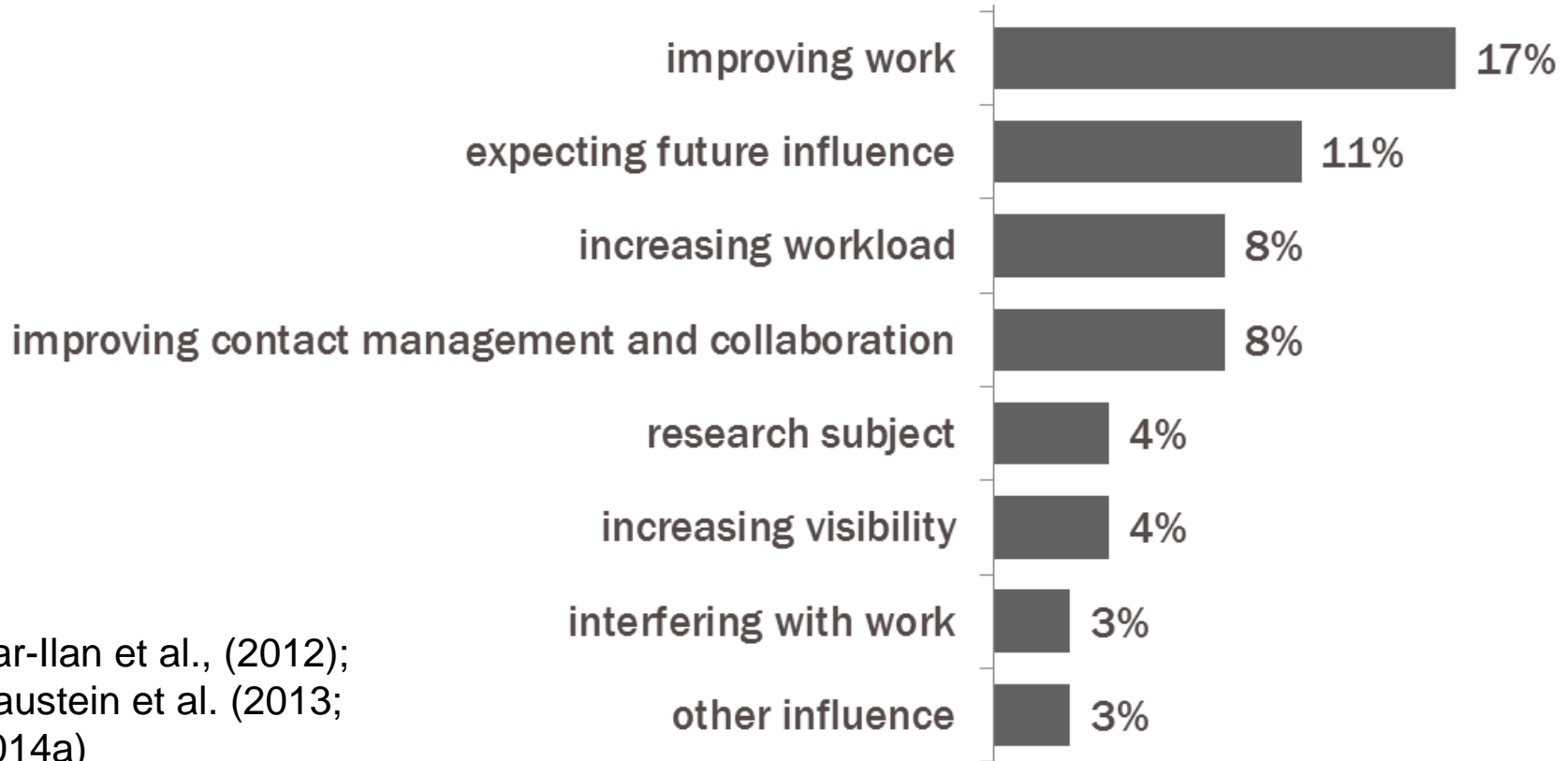
- Animal behavior
- Behavior
- Dogs
- Hydrocortisone

Current findings: what do we know already?

58%   32%

Current findings I

- How do social media influence scholarly workflows?

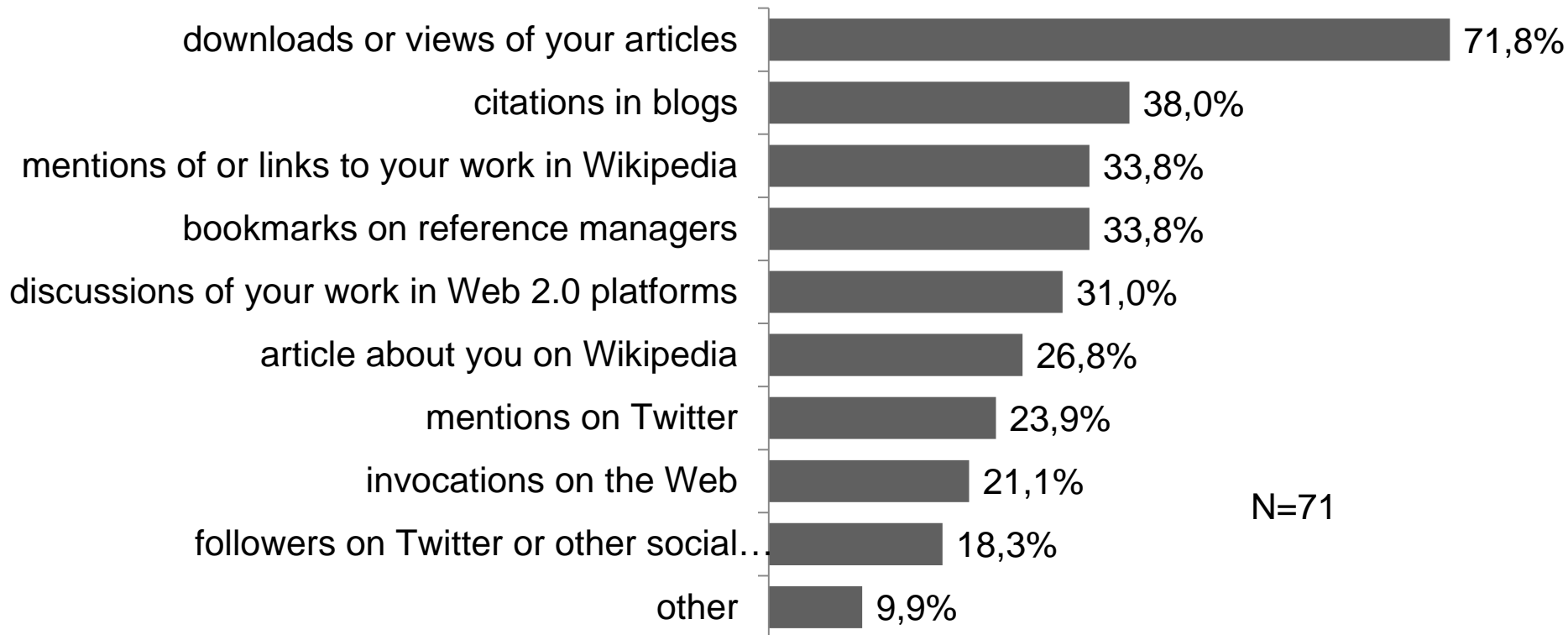


Bar-Ilan et al., (2012);
Haustein et al. (2013;
2014a)

Current findings II

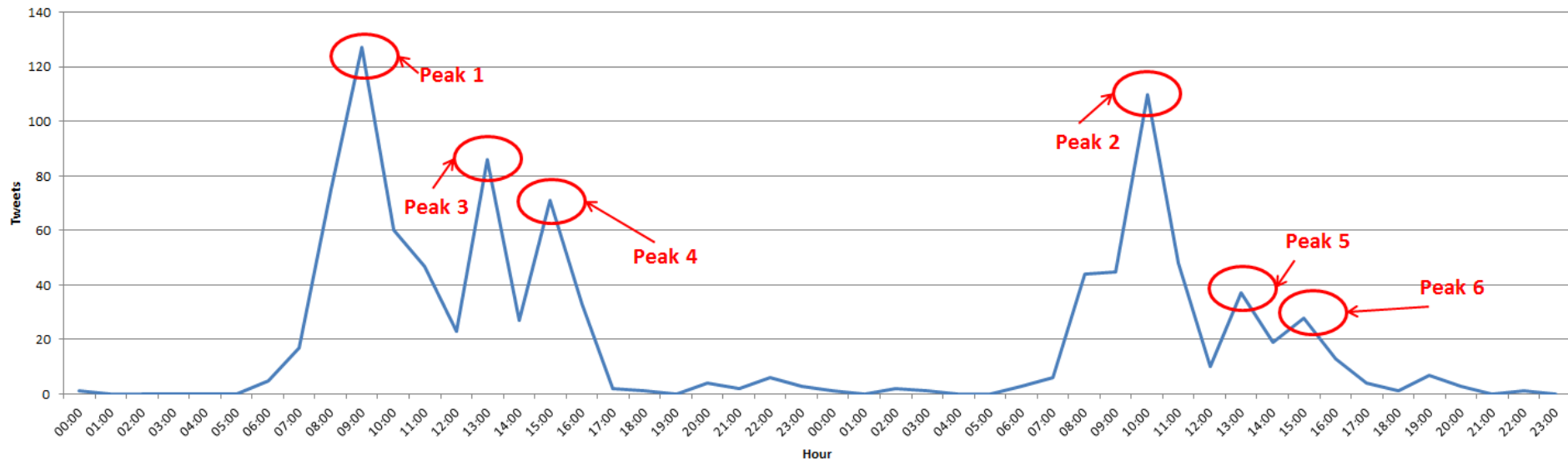
Haustein et al. (2013; 2014a)

- What are relevant alternative indicators for research evaluation?



Current findings III

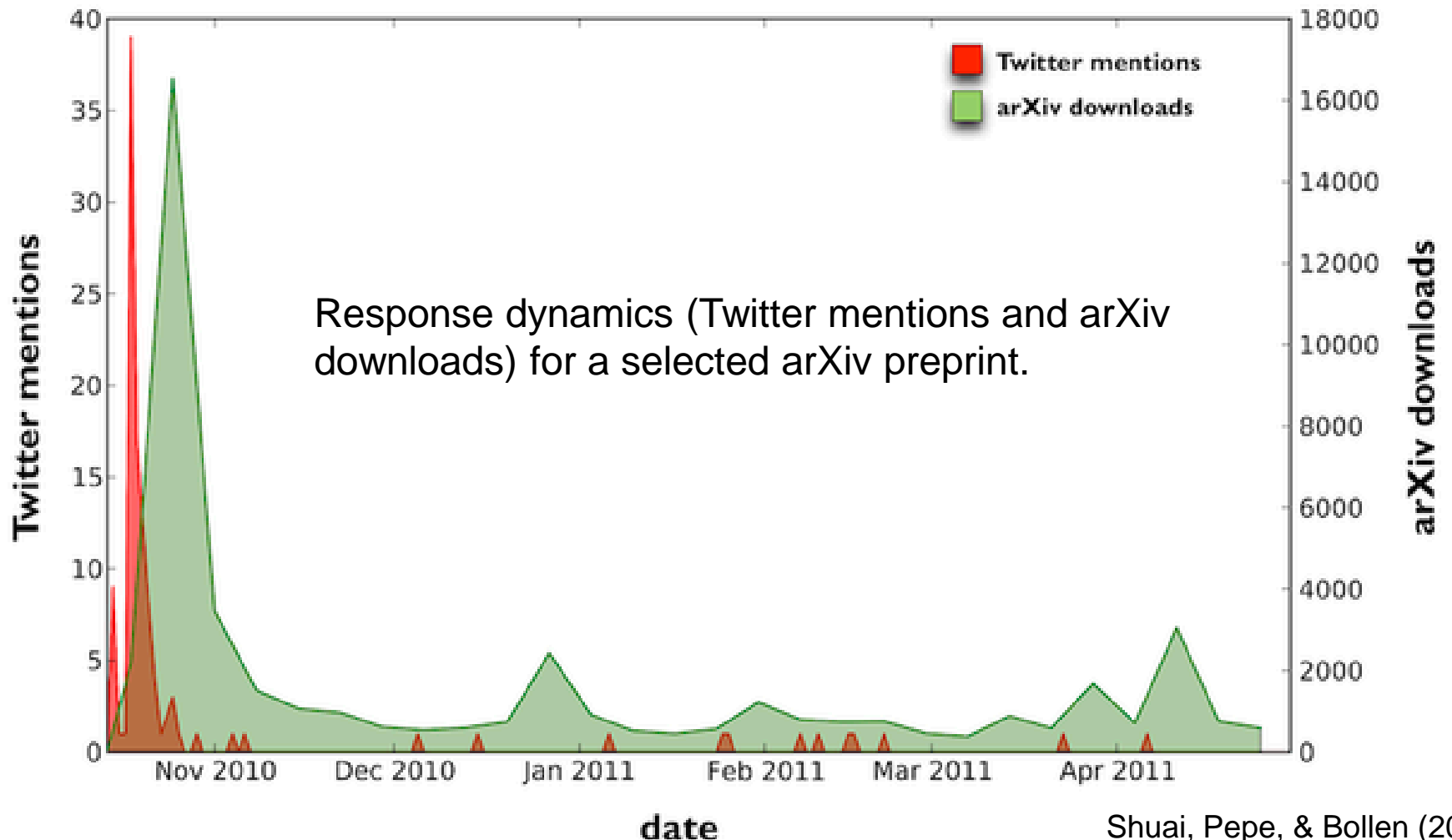
- Altmetrics are influenced by surrounding conditions



- Tweets sent during scientific conference
- Science 2.0 Conference, March 2014, #sci20conf

Current findings IV

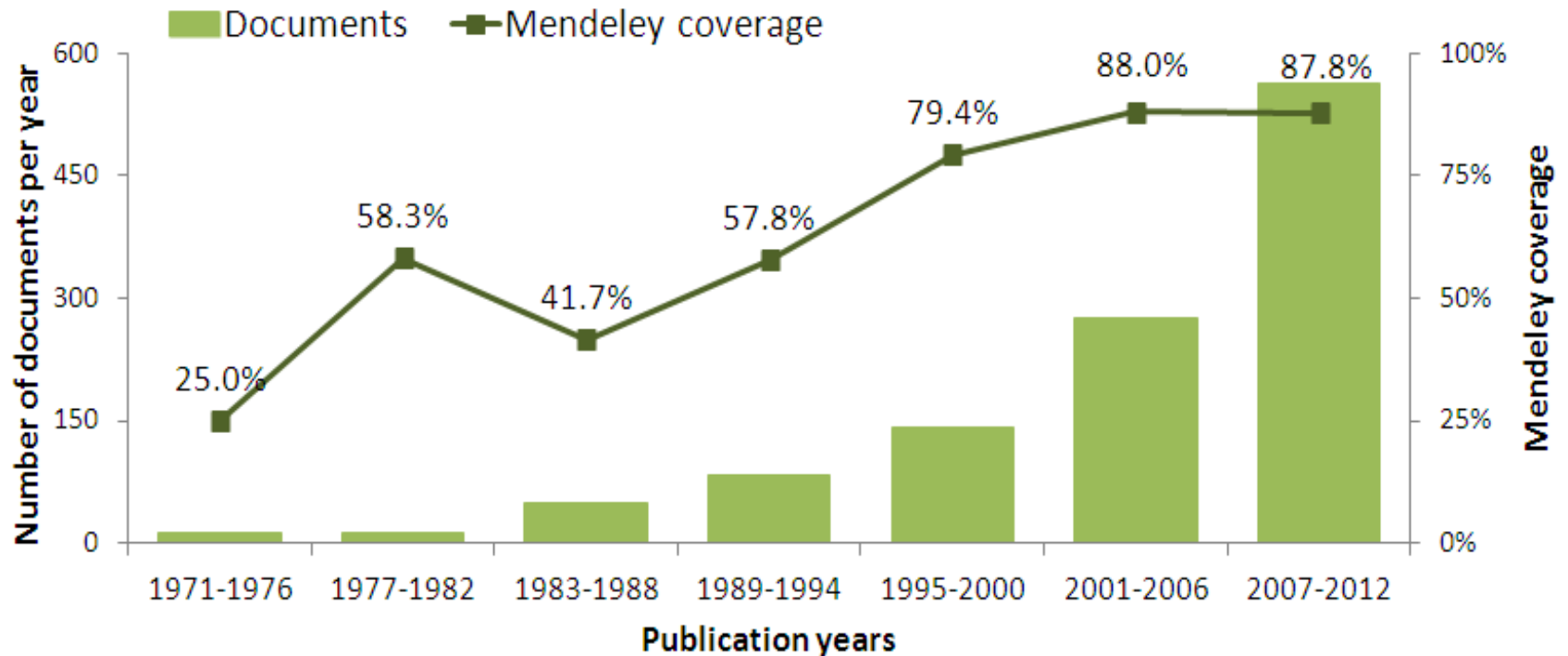
- Altmetrics happen fast



Current findings V

Haustein et al. (2013; 2014a)

- Readers prefer current publications



Current findings VI

Haustein et al. (2014b)

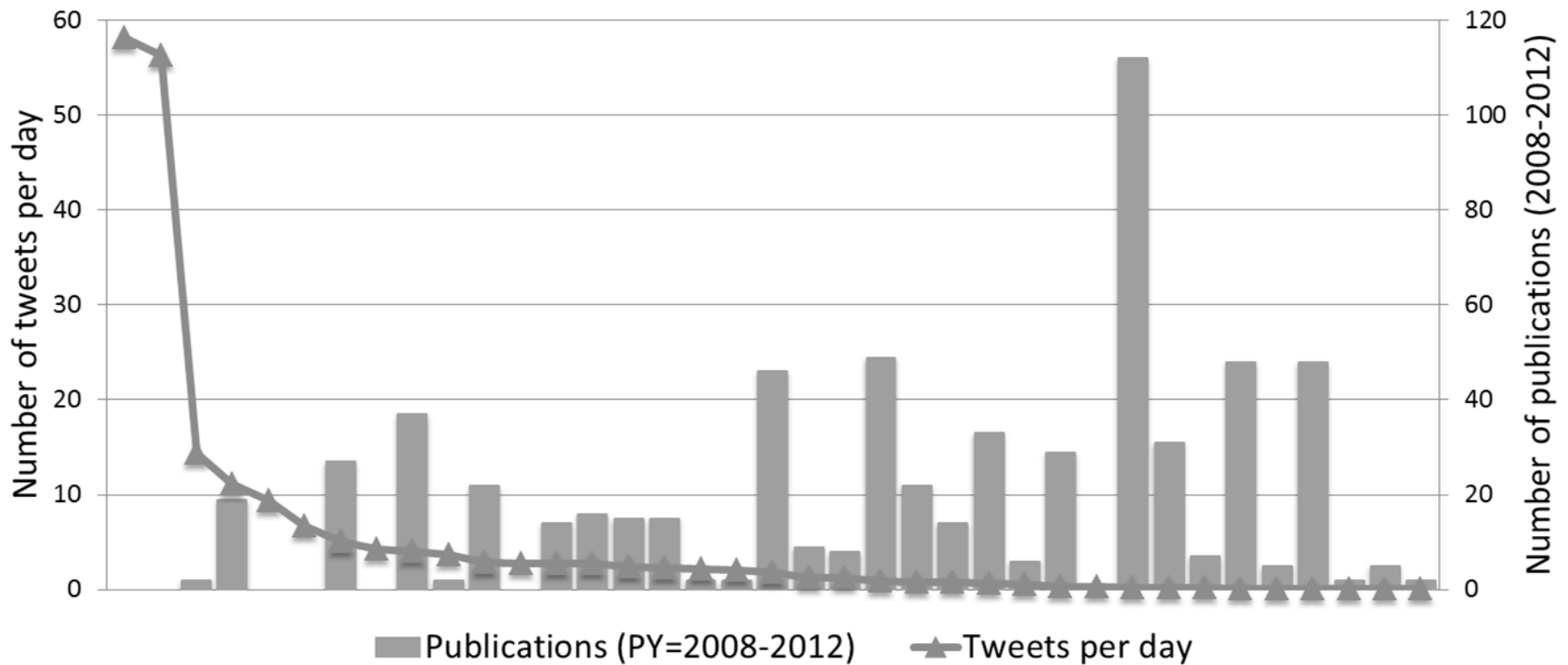
- There are only so many hours in the day...users are either authors or twitterers

Selected astrophysicists (N=37)	tweet rarely (0.0-0.1 tweets per day)	tweet occasionally (0.1-0.9)	tweet regularly (1.2-2.9)	tweet frequently (3.7-58.2)	Total (publishing activity)
do not publish (0 publications 2008-2012)	--	--	1	5	6
publish occasionally (1-9)	4	3	4	2	13
publish regularly (14-37)	--	5	5	3	13
publish frequently (46-112)	1	3	1	--	5
total (tweeting activity)	5	11	11	10	37

Current findings VII

Haustein et al. (2014b)

- Publishing- and tweeting activity



Current findings VIII

Haustein et al. (2014c)

- Correlations between tweets and citations

	N	Spearman's ρ	Mean	Median	Max.
T ²⁰¹⁰	13,763	.104**	2.1	1	237
C ²⁰¹⁰			18.3	7	3,922
T ²⁰¹¹	63,801	.183**	2.8	1	963
C ²⁰¹¹			5.7	2	2,300
T ²⁰¹²	57,365	.110**	2.3	1	477
C ²⁰¹²			1.3	0	234
T ²⁰¹⁰⁻²⁰¹²	134,929	.114**	2.5	1	963
C ²⁰¹⁰⁻²⁰¹²			5.1	1	3,922

Note. **Correlation is significant at the 0.01 level (2-tailed).

Current findings IX

Haustein et al. (2014d)

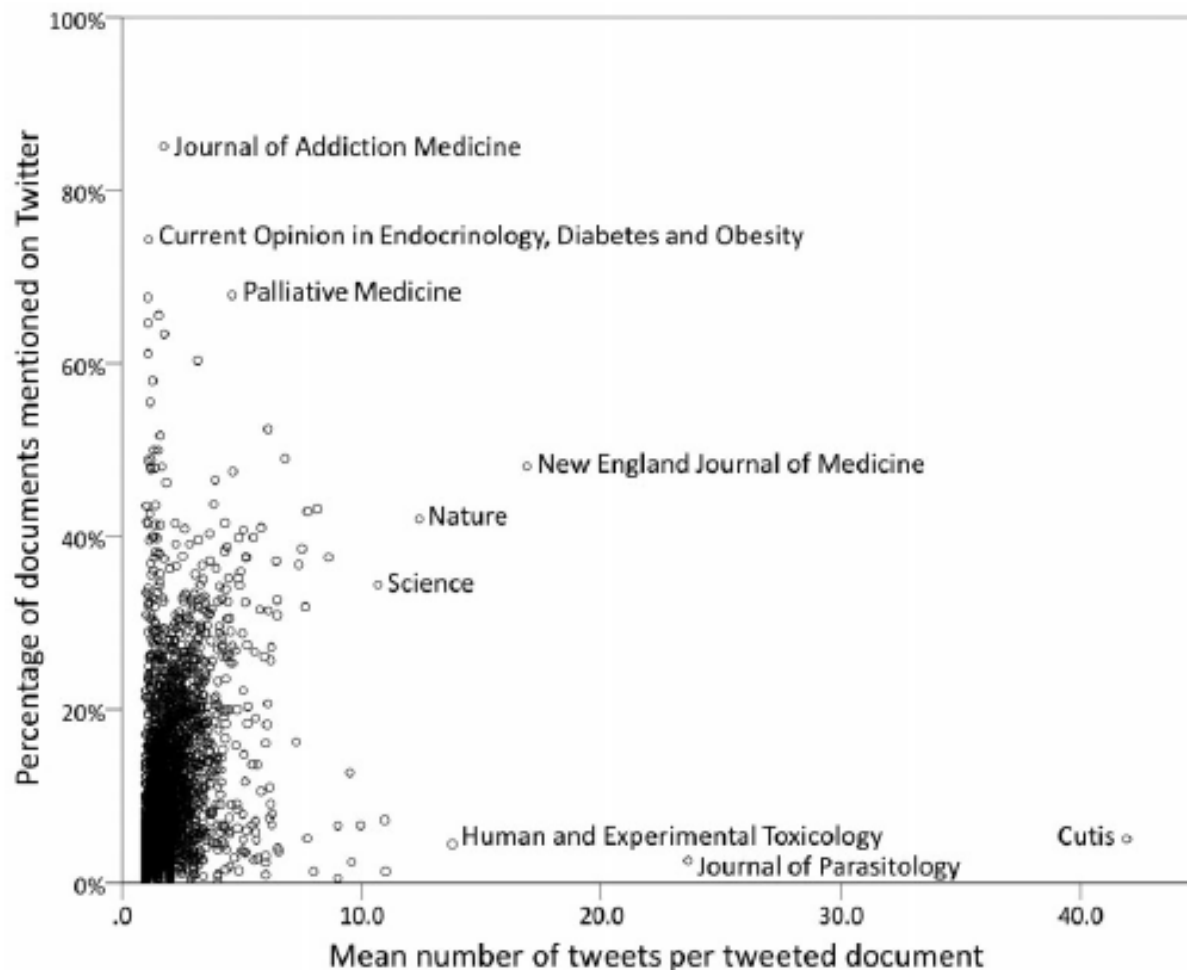
- Relationship between citations, readers, and tweets

NSF disciplines	P_{PubMed}	$P\%_{read}$	$P\%_{tweeted}$	R	T	R/P_{read}	$T/P_{tweeted}$	ρP_{read}	$\rho P_{tweeted}$
Arts	71	66.2%	--	128	--	2.7	--	-0.209	-0.645
Biology	61,785	72.7%	7.1%	570,713	9,634	12.7	2.2	0.448**	0.142**
Biomedical Research	286,398	72.4%	9.8%	2,973,664	90,633	14.3	3.3	0.530**	0.232**
Chemistry	121,874	60.8%	5.5%	619,418	10,933	8.4	1.6	0.476**	0.147**
Clinical Medicine	779,707	62.8%	10.1%	3,712,112	184,002	7.6	2.4	0.439**	0.155**
Earth and Space	26,938	72.4%	4.0%	155,095	2,885	8.0	2.7	0.396**	0.082
Engineering and Technology	27,792	71.6%	5.5%	304,512	2,916	15.3	1.9	0.622**	0.159**
Health	59,073	67.0%	12.8%	257,973	17,306	6.5	2.3	0.336**	0.099**
Humanities	691	40.7%	6.5%	1,036	121	3.7	2.7	0.227**	0.007
Mathematics	2,461	69.2%	5.4%	13,586	197	8.0	1.5	0.306**	-0.209
Physics	19,892	76.4%	1.8%	124,904	539	8.2	1.6	0.386**	0.032
Professional Fields	5,600	72.1%	17.0%	45,231	2,510	11.2	2.6	0.370**	0.177**
Psychology	35,980	81.0%	14.9%	408,440	16,240	14.0	3.0	0.441**	0.075**
Social Sciences	9,019	68.8%	9.1%	54,253	2,192	8.7	2.7	0.431**	0.054
Total	1,437,281	66.2%	9.4%	9,241,065	340,751	9.7	2.5	0.456**	0.157**

Current findings X

Haustein et al. (2014c)

- Relationship between tweet frequency and coverage



Open questions: What do we not know yet?

General and work-related use of online tools



Who are the disseminators?

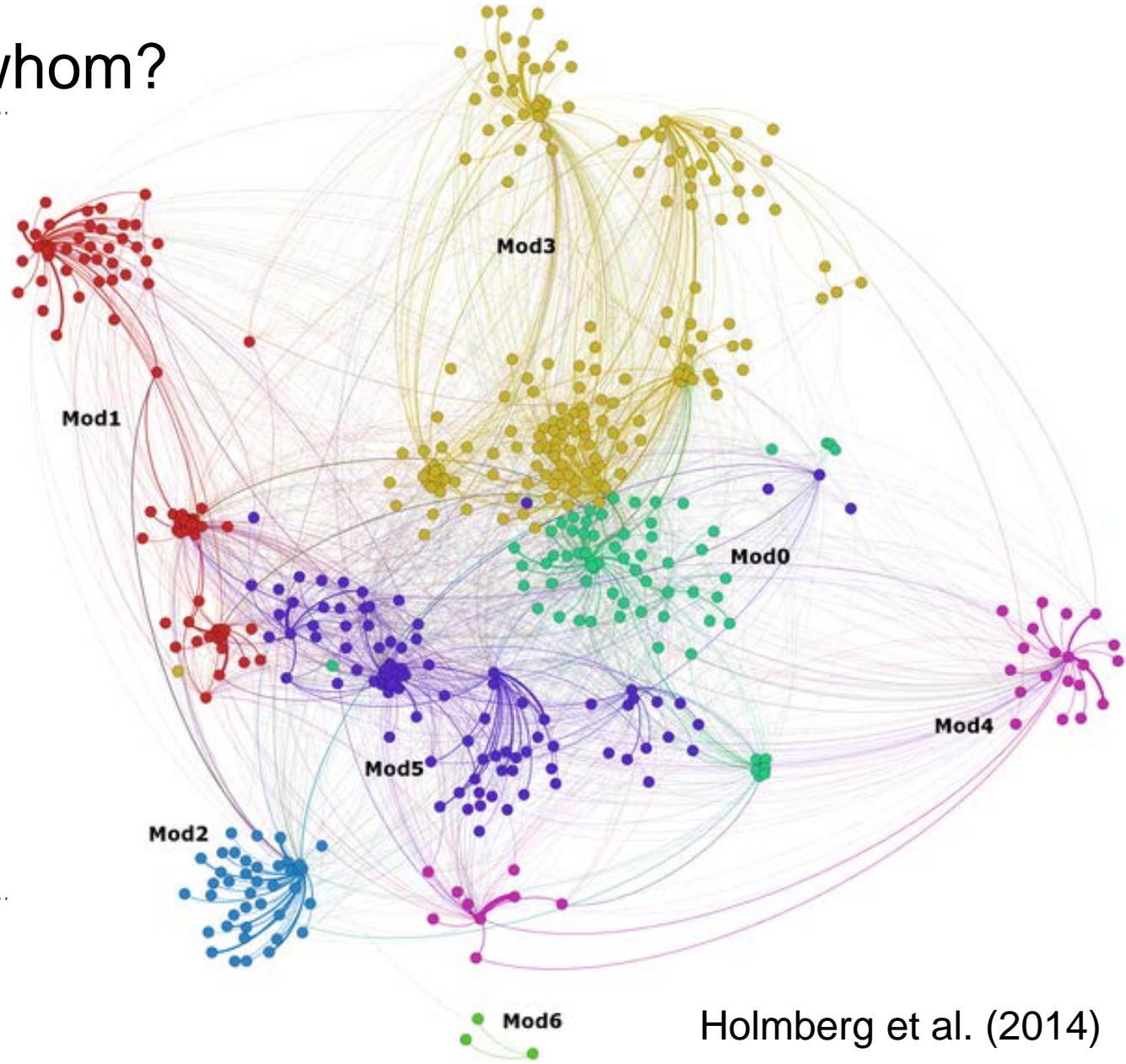
- Roles of the users mentioned in the tweets

Role or profession	
Science communicator	24.13%
Other astrophysicists	21.62%
Organization or association	13.32%
Other	11.20%
Unknown	8.11%
32 astrophysicists	6.18%
Other researchers	5.98%
Teacher or educator	3.67%
Corporative	2.32%
Students	2.12%
Amateur astronomer	1.35%

doi:10.1371/journal.pone.0106086.t001

Holmberg et al. (2014)

Who talks to whom?



The 4 social media-types in science



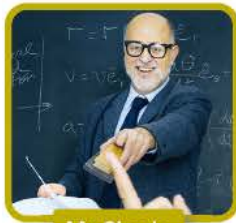
Mr Nerd



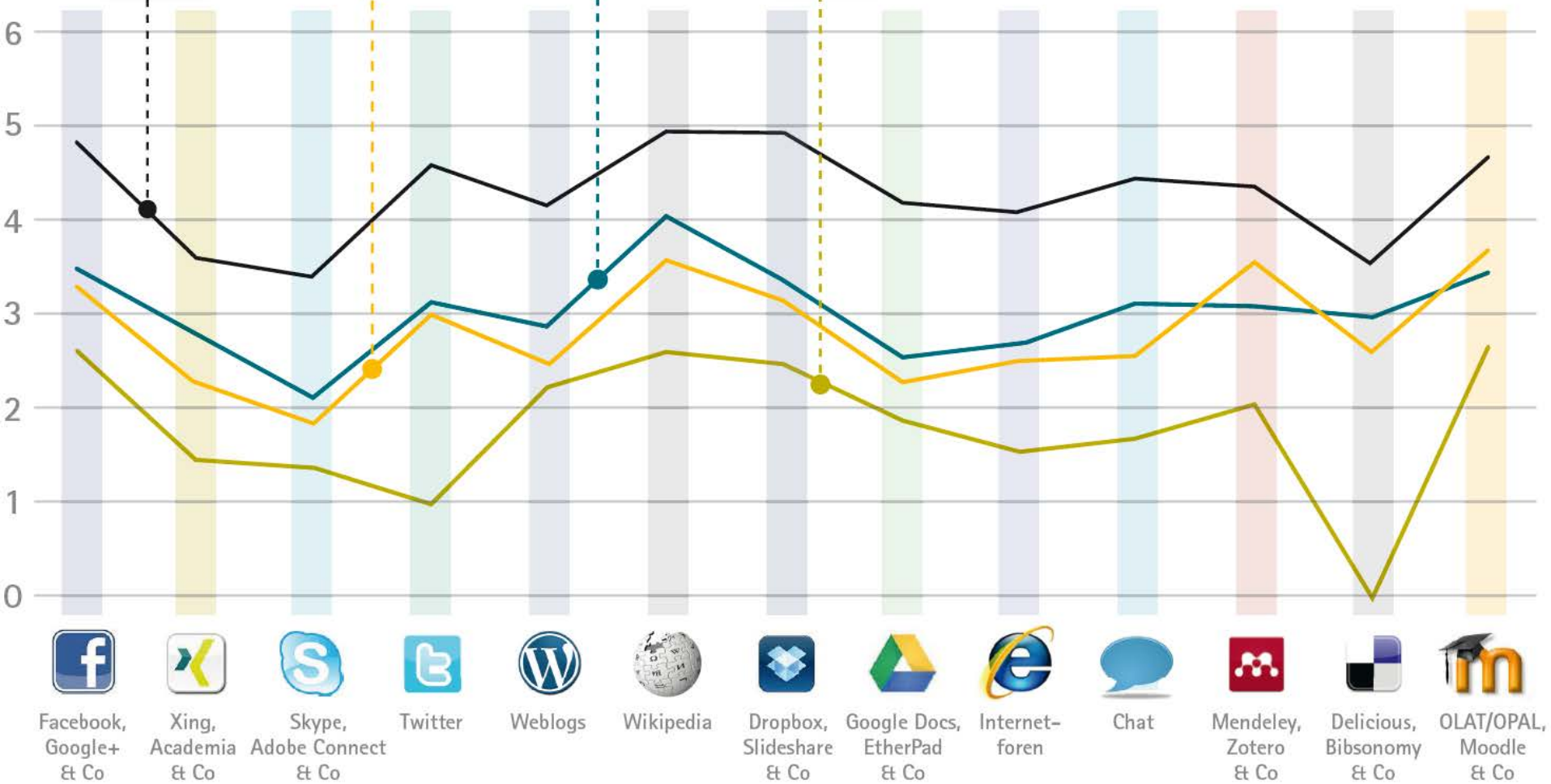
Ms Maker



Mr Tech



Mr Classic



Take aways

- Challenges
 - Data manipulation: creating usage, faking impact
 - Data quality
 - Representativeness: what do we miss?
- Research desiderata
 - Use of social media tools varies (discipline-specific: Haustein & Siebenlist, 2011; Holmberg & Thelwall, 2013; Mohammadi & Thelwall, 2013)
 - Understand context of using research products
 - Understand information flows
 - Support selection of tools and evaluation of indicators

Barcamp: Wissenschaft 2.0

Forschung neu entdecken

17./18. October 2014
Hamburg

www.wissenschaft-kontrovers.de

gefördert vom
Bundesministerium
für Bildung
und Forschung

wissenschaft im dialog

Wissenschaft kontrovers
im Wissenschaftsjahr 2014 – Die digitale Gesellschaft

Barcamp:
**Wissenschaft 2.0 -
Forschung neu denken**
17./18. Oktober 2014
Hamburg

In Kooperation mit dem
Leibniz-Forschungsverbund Science 2.0

Freitag, 17.10.2014
13–18 Uhr
Samstag, 18.10.2014
10–18 Uhr

Veranstaltungsort:
Betahaus Hamburg
Eiffelstraße 43
22769 Hamburg

Anmeldung:
kontrovers@w-i-d.de
Die Teilnahme ist kostenlos!

www.wissenschaft-kontrovers.de
wissenschaftimdialog
www.digital-ist.de
wissenschaftsjahr

Eine Initiative des Bundesministeriums
für Bildung und Forschung

Wissenschaftsjahr 2014
**DIE DIGITALE
GESELLSCHAFT**

Partner
In Kooperation mit
science 2.0 ZBW

The poster is red with white and blue text. It features a network diagram of nodes and lines on the right side. There are two large white circles on the red background. The text is arranged in a clear, hierarchical manner, starting with the event title and date, followed by the organizing institution and specific details like location and registration.

Second International Science 2.0-Conference

25./26. March 2015
Hamburg

#sci20conf



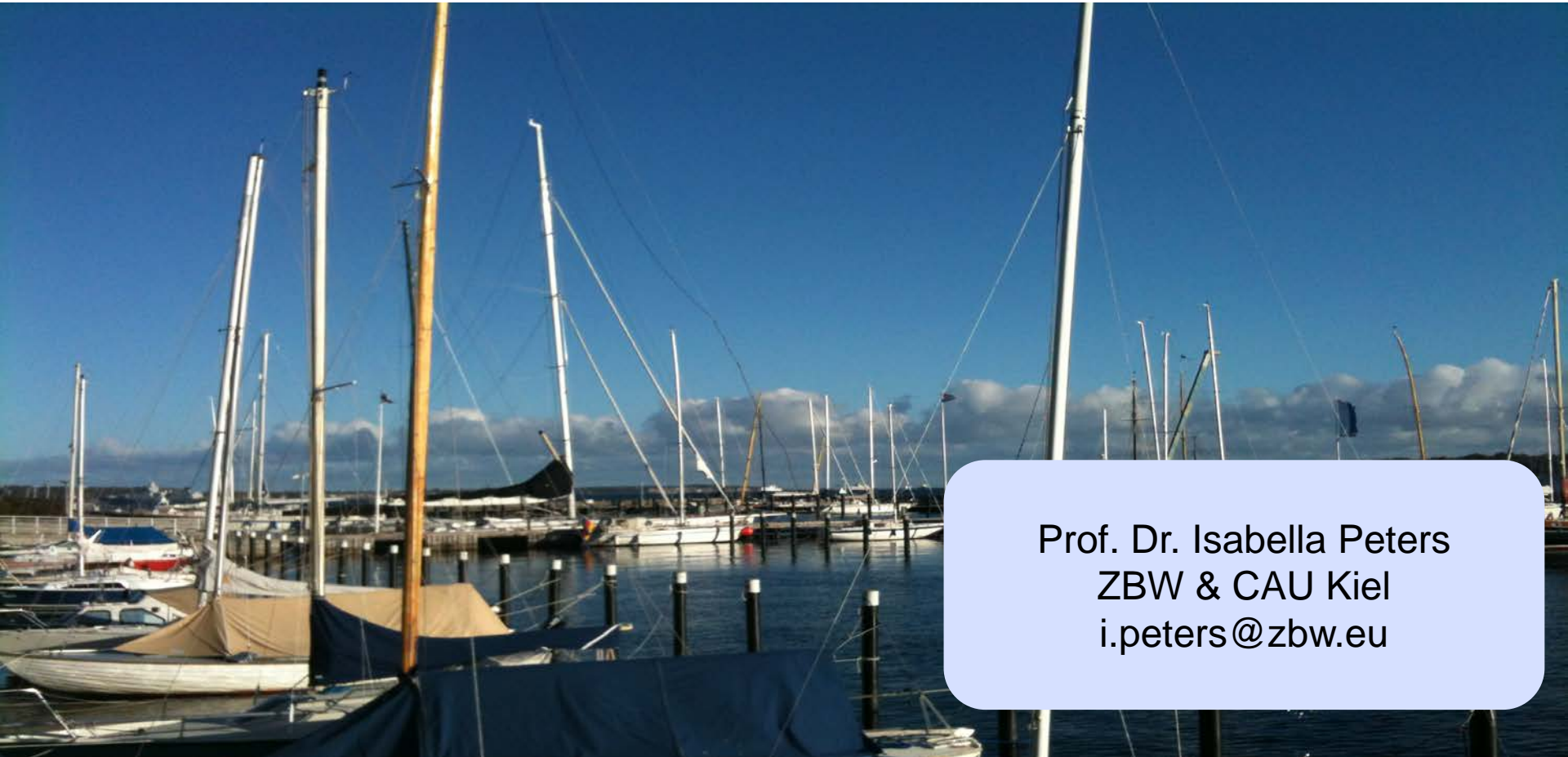
Foto: © Timo Wilke

www.science20-conference.de

Literatur & Links

- Bar-Ilan, J., Haustein, S., Peters, I., Priem, J., Shema, H., & Terliesner, J. (2012). Beyond citations: Scholars' visibility on the social Web. In Proceedings of the 17th International Conference on Science and Technology Indicators, Montréal, Canada (pp. 98–109). Retrieved from <http://arxiv.org/abs/1205.5611>
- Haustein, S., & Siebenlist, T. (2011). Applying social bookmarking data to evaluate journal usage. *Journal of Informetrics*, 5(3), 446–457.
- Haustein, S., & Peters, I. (2012). Using Social Bookmarks and Tags as Alternative Indicators of Journal Content Description. *First Monday*, 17(11) .
- Haustein, S., Peters, I., Bar-Ilan, J., Priem, J., Shema, H., & Terliesner, J. (2014a). Coverage and adoption of altmetrics sources in the bibliometric community. *Scientometrics*, January. DOI: 10.1007/s11192-013-1221-3
- Haustein, S., Bowman, T. D., Holmberg, K., Peters, I., & Larivière, V. (2014b). Astrophysicists on Twitter: An in-depth analysis of tweeting and scientific publication behavior. *Aslib Journal of Information Management*, 66(3), 279-296.
- Haustein, S., Peters, I., Sugimoto, C. R., Thelwall, M., & Larivière, V. (2014c). Tweeting Biomedicine: An Analysis of Tweets and Citations in the Biomedical Literature. *Journal of the American Society for Information Science and Technology*, 65(4), 656-669. DOI: 10.1002/asi.23101
- Haustein, S., Larivière, V., Thelwall, M., Amyot, D., & Peters, I. (2014d). Tweets vs. Mendeley readers: How do these two social media metrics differ. *Information Technology*, 56(5), 207–215. doi: [10.1515/itit-2014-1048](https://doi.org/10.1515/itit-2014-1048)
- Haustein, S., Peters, I., Bar-Ilan, J., Priem, J., Shema, H., & Terliesner, J. (2013). Coverage and Adoption of Altmetrics Sources in the Bibliometric Community. In Proceedings of the 14th International Society of Scientometrics and Informetrics Conference, Vienna, Austria (pp. 468-483).
- Holmberg, K., Bowman, T.D., Haustein, S., & Peters, I. (2014). Astrophysicists' Conversational Connections on Twitter. *PLoS ONE* 9(8): e106086. doi:10.1371/journal.pone.0106086
- Mohammadi, E. & Thelwall, M. (2013). Assessing the Mendeley readership of social sciences and humanities research. In Proceedings of the 14th International Society of Scientometrics and Informetrics Conference, Vienna, Austria, Vol. 1 (pp. 200-2014).
- Peters, I., Haustein, S., & Terliesner, J. (2011). Crowdsourcing Article Evaluation. In Proceedings of the 3rd ACM International Conference on Web Science, Koblenz, Germany.
- Pscheida, D., Albrecht S., Herbst, S., Minet, C. & Köhler, T. (2014). Nutzung von Social Media und onlinebasierten Anwendungen in der Wissenschaft. Erste Ergebnisse des Science 2.0-Survey 2013 des Leibniz-Forschungsverbundes „Science 2.0“, Dresden. Online: <http://nbn-resolving.de/urn:nbn:de:bsz:14-qucosa-132962>
- Shuai, X., Pepe, A., & Bollen, J. (2012). How the Scientific Community Reacts to Newly Submitted Preprints: Article Downloads, Twitter Mentions, and Citations. *PLOS ONE* 7, no. 11 (2012): e47523. doi:10.1371/journal.pone.0047523
- Social Media-Typen: http://www.goportis.de/fileadmin/downloads/aktuelles/Bericht_escience_2_0_Hochschulsample_Download.pdf

Thank you! Vielen Dank!



Prof. Dr. Isabella Peters
ZBW & CAU Kiel
i.peters@zbw.eu