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Social Media as Research Data

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Slides are available at: http://de.slideshare.net/katrinweller

SERIOUSLY? DO THEY NOT REALIZE THAT 99% OF TWEETS ARE WORTHLESS BABBLE THAT READ SOMETHING LIKE ‘JUST WOKE UP. GOING TO STARBUCKS NOW. GETTING LATTE.’

READER’S COMMENT FOUND IN THE COMMENT SECTION FOR GROSS, D. (2010, APRIL 14). LIBRARY OF CONGRESS TO ARCHIVE YOUR TWEETS. CNN. RETRIEVED FROM HTTP://EDITION.CNN.COM/2010/TECH/04/14/LIBRARY.CONGRESS.TWITTER/, RETRIEVED NOVEMBER 19.
PHOTOS: HTTPS://WWW.FLICKR.COM/SEARCH/?TEXT=COFFEE&LICENSE=4%2C5%2C6%2C9%2C10

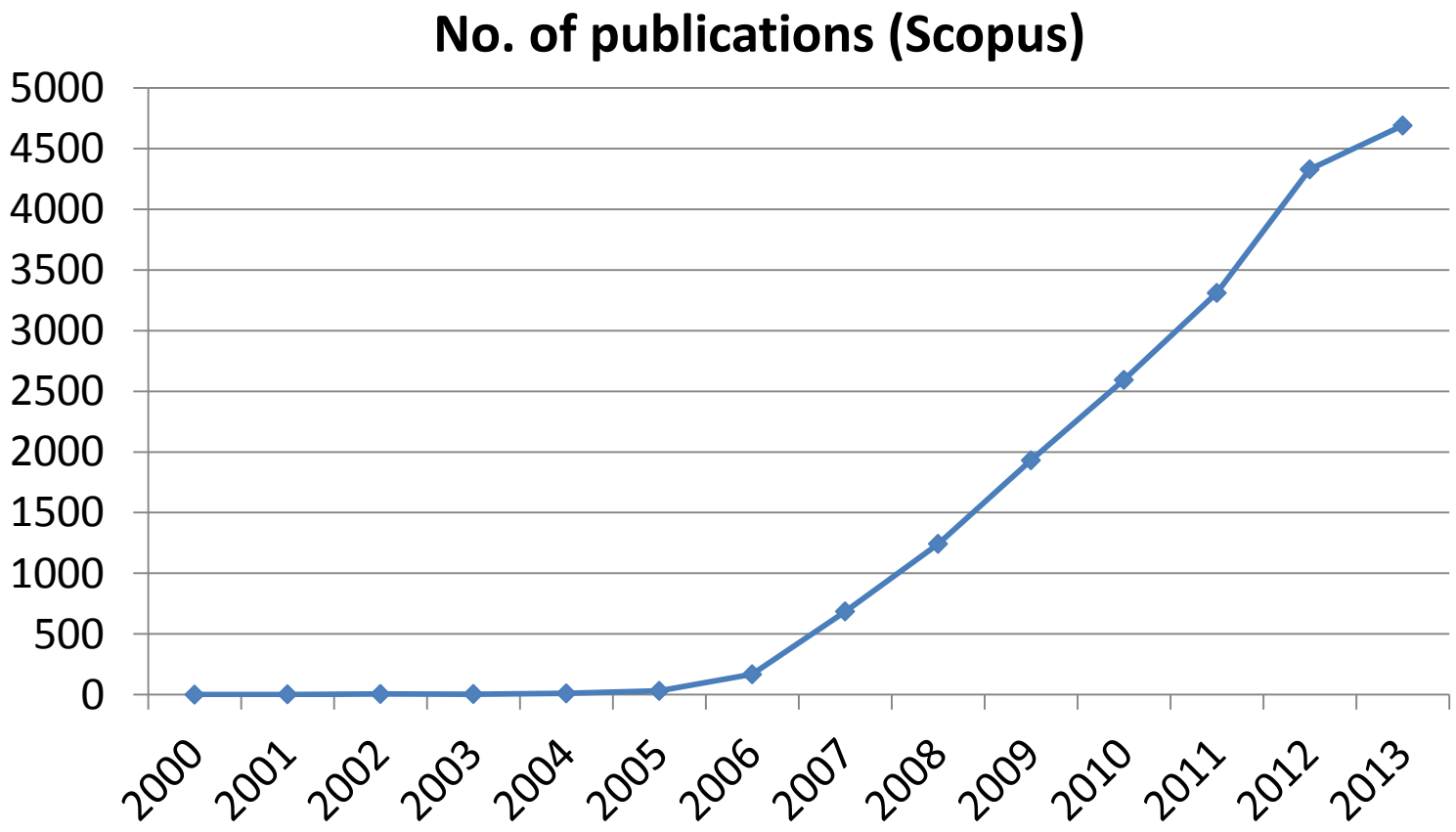
Chances in Social Media Research

- Researchers value social media as a new type of data
- Previously „ephemeral data“ become visible
- Immediate – quick reaction to events
- Structured
- „natural“ data

“What I find really interesting is that structure becomes manifest in internet communication. So it’s the first time in history actually that we can, that social structures between people become manifest within a technology. (...) They become visible, they become crawlable, they become analyzable.”

Kinder-Kurlanda, Katharina E., and Katrin Weller. 2014. "'I always feel it must be great to be a hacker!': The role of interdisciplinary work in social media research." In *Proceedings of the 2014 ACM conference on Web Science*, 91-98. New York: ACM.

Social media research 2000-today



(TITLE-ABS-KEY("social media") OR TITLE-ABS-KEY("social web") OR TITLE-ABS-KEY("social software") OR TITLE-ABS-KEY("web 2.0")) AND PUBYEAR > 1999

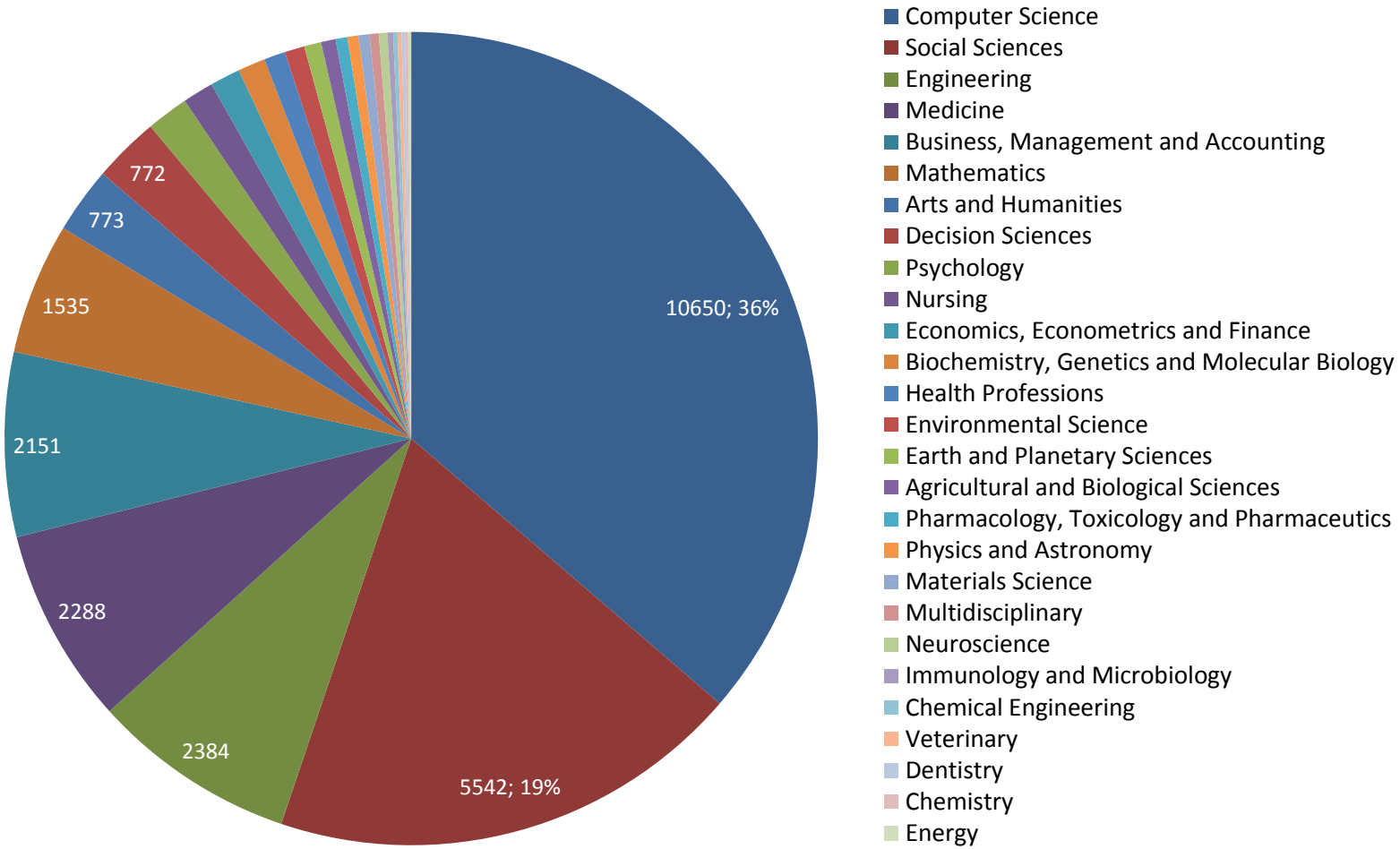
What is being studied?

- User groups
- Events
- Audiences
- Practices
- Information flow
- Influence
- Opinions and sentiments
- Networks
- Interactions
- Predictions
- Language

- Political communication
- Activism
- Crisis communication/disaster response
- E-learning
- Health
- Brand communication
- …

A new discipline?

Scopus: 2000-today by subject area



Social Media Data

- Texts
- Images
- Videos
- Mixed formats
- Connections I (friends, followers)
- Connections II (links/URLs)
- Connections/Actions (likes, favs, comments, downloads)

→ Different methods!

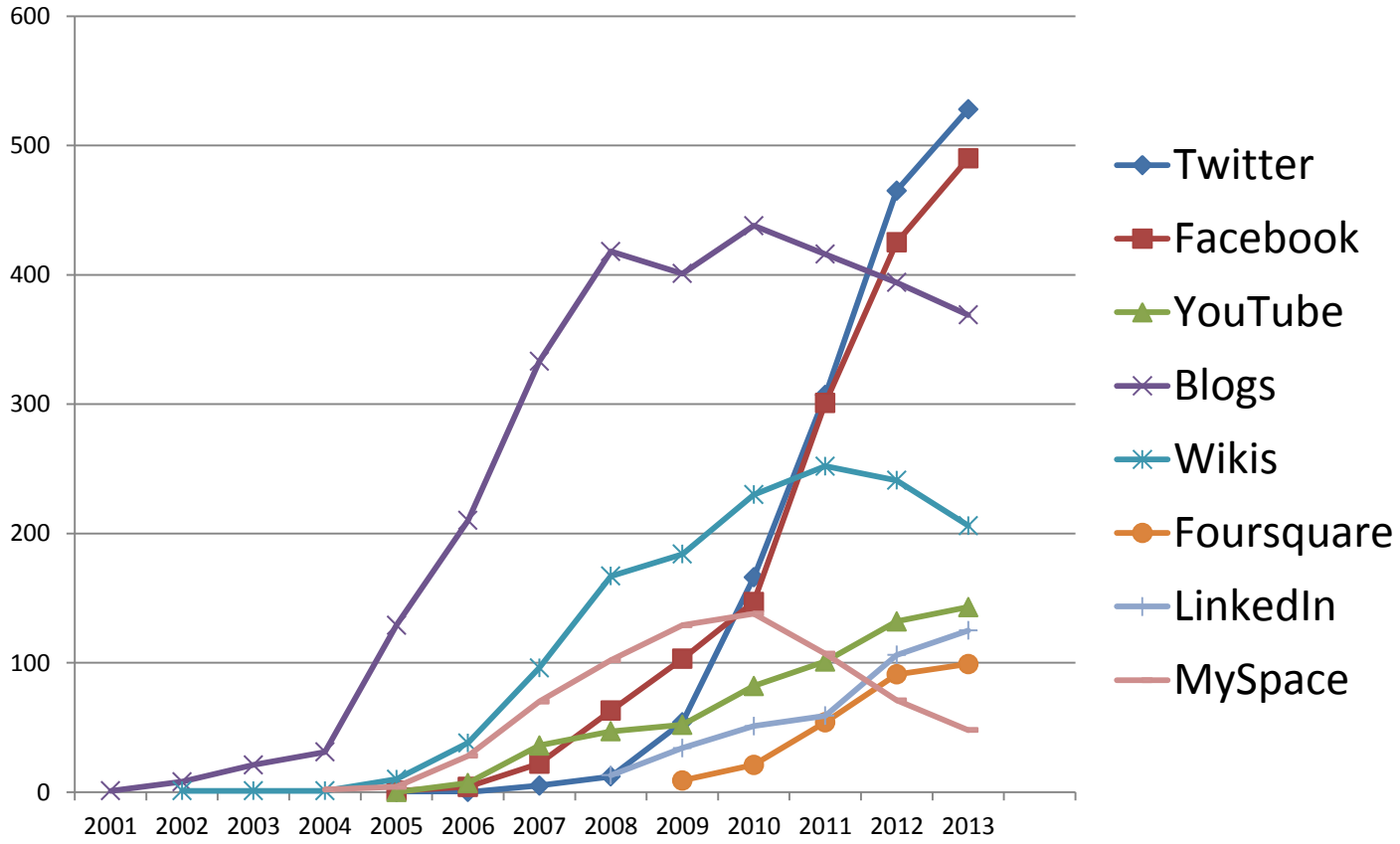
Different methods and types of datasets, examples from popular social science papers

No.	Method	Domain	Dataset
[1]	Analytic: Twitter metrics	Technical	309,740 Twitter users (with followers and tweets)
[2]	Examination: interviews	Communication	Interviews with 181 Twitter users
[3]	Examination: experiment	Education	Experiment with 125 students.
[4]	Analytic: linguistic (sentiment analysis)	Linguistics	20,000 tweets
[5]	Analytic: linguistic (event detection)	Linguistics	163,500,000 tweets
[6]	Analytic: linguistic (part of speech)	Linguistics	1,827 annotated tweets
[7]	Analytic: linguistic (sentiment analysis)	Linguistics	475,000,000 tweets
[8]	Analytic: quantitative (network analysis)	Security	17,803 tweets from 8,616 users + 1st degree network (3,048,360 directed edges, 631,416 unique followers, and 715,198 unique friends)
[9]	Analytic: linguistic (sentiment analysis)	Linguistics	200,000 annotated tweets
[10]	Analytic: linguistic (conversation structures)	Linguistics	1.3 million Twitter conversations, with each conversation containing between 2 and 243 posts
[11]	Analytic: network analysis, Twitter metrics, clustering, content analysis	Classification	One person's Twitter network (652 followers, 114 followings). 3,112 tweets.
[12]	Analytic: network analysis	Geography	481,248 tweets, 1,953 user pairs
[13]	Analytic: content analysis, Twitter metrics	Communication	102,500 tweets
[14]	Examination: experiment	Business	Experiment with 1,677 participants
[15]	Design and Development: linguistic (method development)	Linguistics	449 tweets sampled from 1.5 GB of Twitter data
[16]	Examination: survey	Classification	Survey with 505 young American adults
[17]	Design and Development: event detection (method development)	Geography	21,623,947 geo-tagged tweets
[18]	Analytic: Twitter metrics, linguistic (sentiment analysis)	Politics	104,003 tweets
[19]	Analytic: content analysis	Business	93 user profiles and 930 tweets
[20]	Analytic: content analysis, Twitter metrics Examination: survey	Education	4,574 tweets Qualitative survey with 11 participants
[21]	Analytic: content analysis	Communication	22,248 tweets
[22]	Analytic: network analysis, Twitter metrics	Geography	99,832 tweets
[23]	Analytic: Twitter metrics, linguistic	Geography	1,535,929,521 tweets from 71,273,997 users
[24]	Analytic: content analysis	Politics	4,869,264 tweets (and 43,378 YouTube URLs)
[25]	Examination: experiment	Education	Two experiments with 125 and 135 students.

Table 2. Analysis of methods, domains and datasets in the selected publications.

Weller, K. (2014). What do we get from Twitter – and what not? A close look at Twitter research in the social sciences. Knowledge Organization. 41(3), 238-248

Social Media Research



Number of publications per year, which mention the respective social media platform's name in their **title**. Scopus Title Search. For details: http://kwelle.wordpress.com/2014/04/07/bibliometric-analysis-of-social-media-research/

One of the Challenges: Data Collection and Sharing

"But you can't make your data available for others to look at, which means both your study can't really be replicated and it can't be tested for review. But also it just means your data can't be made available for other people to say, Ah you have done this with it, I'll see what I can do with it, (…) There is no open data."

Weller, Katrin, and Katharina E. Kinder-Kurlanda. 2015. "Uncovering the Challenges in Collection, Sharing and Documentation: The Hidden Data of Social Media Research?." In *Standards and Practices in Large-Scale Social Media Research: Papers from the 2015 ICWSM Workshop. Proceedings Ninth International AAAI Conference on Web and Social Media Oxford University, May 26, 2015 – May 29, 2015*, 28-37. Ann Arbor, MI: AAAI Press.

Example 2008-2013 papers on Twitter and elections: data sources

Data source	number
No information	11
Collected manually from Twitter website (Copy-Paste / Screenshot)	6
Twitter API (no further information)	8
Twitter Search API	3
Twitter Streaming API	1
Twitter Rest API	1
Twitter API user timeline	1
Own program for accessing Twitter APIs	4
Twitter Gardenhose	1
Official Reseller (Gnip, DataSift)	3
YourTwapperKeeper	3
Other tools (e.g. Topsy)	6
Received from colleagues	1

Weller, K. (2014). Twitter und Wahlen: Zwischen 140 Zeichen und Milliarden von Tweets. In: R. Reichert (Ed.), Big Data: Analysen zum digitalen Wandel von Wissen, Macht und Ökonomie (pp. 239-257). Bielefeld: transcript.

Archiving Twitter Datasets? Current approaches

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
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Format supported by
Twitter Terms of services

8	339614809721528 34
9	339614234347028 48
10	339612211811573 78
11	339599730275942 42
12	339594075137925 12
13	339579235144826 90
14	339579116110520 32
15	339578289706803 20
16	339571090100101 12
17	339566761872056 32
18	339564630578339 84
19	339561739780136 97
20	339561067978711 04
21	339556605532569 61
22	339554009594224 64
23	339551319786905 60
24	339549964691087 36
25	339548931172761 60
26	339547047552655 36
27	339546300127805 44
28	339545115991818 27
29	339543435250442 24
30	339530319493980 17
31	339528349639270 40

Available datasets

- From individual researchers/groups (sometimes „black market“).
- From conferences: e.g. ICWSM
- Archival institutions: e.g. GESIS (*doi:10.4232/1.12319*)

TECHNOLOGY

Library of Congress' Twitter archive is a huge #FAIL

More than five years on, the library's Twitter archive project is in limbo — with no end in sight.

By NANCY SCOLA | 7/11/15 5:09 PM EDT

http://www.politico.com/story/2015/07/library-of-congress-twitter-archive-119698.html

Challenges in Archiving Twitter Data

Sources for Challenges

(1) the Twitter Terms of Services

(2) ethical challenges

(3) lack of standard metadata and collection methods

(4) the ever changing nature of Twitter – and Twitter users

Sources for Challenges

(1) the Twitter Terms of Services

(2) ethical challenges

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(4) the ever changing nature of Twitter – and Twitter users

The changing nature of Twitter in 5 examples

#1

Deleted content

#2

Lost context: interfaces, look and feel

#3

Lost context: stories, meanings

#4

Lost context: user names

#5

URLs and images

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Questions and Feedback

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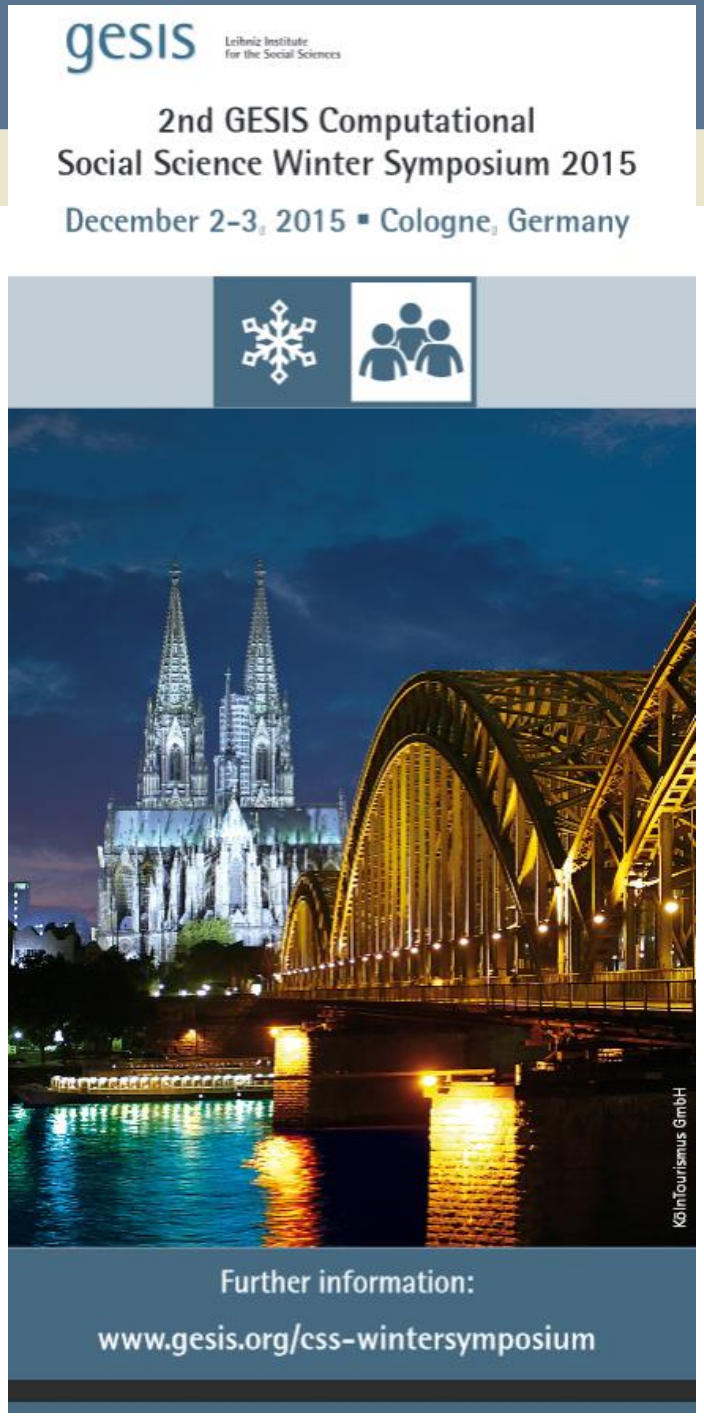
http://katrinweller.net

www.gesis.org/css-wintersymposium



Supplement: some useful references

Tools / Methods for collecting tweets:

- Borra, E., & Rieder, D. (2014). Programmed method: developing a toolset for capturing and analyzing tweets, Aslib Journal of Information Management, 66(3), 262 – 278. DOI: http://dx.doi.org/10.1108/AJIM-09-2013-0094
- Bruns, A., & Liang, Y. E. (2012). Tools and methods for capturing Twitter data during natural disasters. First Monday, 17(4). doi:10.5210/fm.v17i4.3937
- Gaffney, D., & Puschmann, C. (2014). Data collection on Twitter. In Weller, A. Bruns, J. Burgess., M. Mahrt and C. Puschmann (Ed.), Twitter and Society (pp. 55–68). New York: Peter Lang.

[There are much more tools, though. See, e.g. collection at: https://docs.google.com/document/d/1UaERzROI986HqcwrBDLaqGG8X_lYwctj6ek6ryqDOiQ/edit (curated by D. Freelon).

Supplement: some useful references

Challenges in collecting tweets / data quality:

- Bruns, A. (2011, June 21). Switching from Twapperkeeper to yourTwapperkeeper. Retrieved January 31, 2015 from http://www.mappingonlinepublics.net/2011/06/21/switching-from-twapperkeeper-to-yourtwapperkeeper/.
- Bruns, A. and Stieglitz, S. (2014), "Twitter data: what do they represent?" *IT Information Technology*, Vol. 59 No. 5, pp. 240-5, [online], available at: http://www.degruyter.com/view/j/itit.2014.56.issue-5/itit-2014-1049/itit-2014-1049.xml (accessed 28 February 2015), DOI: 10.1515/itit-2014-1049.
- Jungherr, A., Jurgens, P. and Schoen, H. (2012), "Why the Pirate Party won the German Election of 2009 or The trouble with predictions: a response to Tumasjan, A., Sprenger, T. O., Sander, P. G. and Welpe, I. M. Predicting elections with Twitter: what 140 characters reveal about political sentiment", *Social Science Computer Review*, Vol. 30 No. 2, pp. 229-34, [online], available at: http://ssc.sagepub.com/content/30/2/229 (accessed 28 February 2015), DOI: 10.1177/0894439311404119.
- Morstatter, Fred, Jürgen Pfeffer, Huan Liu, and Kathleen M. Carley. 2013. "Is the Sample Good Enough? Comparing Data from Twitter's Streaming API with Twitter's Firehose." http://arxiv.org/abs/1306.5204.
- Sumers, E. (2015). Tweets and Deletes. Retrieved, June 9, 2015 from: https://medium.com/on-archivy/tweets-and-deletes-727ed74f84ed (see also: https://github.com/edsu/twarc)

Supplement: some useful references

Bibliometric studies of Twitter researchers:

- Williams, S. A., Terras, M. M., & Warwick, C. (2013a). What do people study when they study Twitter? Classifying Twitter related academic papers. Journal of Documentation, 69(3): 384-410.
- Williams, S. A., Terras, M. M., & Warwick, C. (2013b). How Twitter Is Studied in the Medical Professions: A Classification of Twitter Papers Indexed in PubMed. In Med 2.0 2013. doi: 10.2196/med20.2269.
- Weller, K. (2014b). What do we get from Twitter – and what not? A close look at Twitter research in the social sciences. Knowledge Organization 41(3), 238-248.
- Zimmer, M., & Proferes, J.N. (2014). A topology of Twitter research: disciplines, methods, and ethics. Aslib Journal of Information Management, 66(3), 250–261. doi:10.1108/AJIM-09-2013-0083

Supplement: some useful references

Critical perspectives on data access and inequalities:

- Boyd, D. and Crawford, K. (2012), "Critical questions for Big Data: provocations for a cultural, technological, and scholarly phenomenon", *Information, Communication & Society*, Vol. 15 No. 5, pp. 662-79, [online], available at: http://www.tandfonline.com/doi/full/10.1080/1369118X.2012.678878#abstract (accessed 28 February 2015), DOI: 10.1080/1369118X.2012.678878.

Supplement: some useful references

Legal and ethical challenges:

- Beurskens, M. (2014). Legal Questions of Twitter Research. In K. Weller, A. Bruns, J. Burgess., M. Mahrt and C. Puschmann (Eds.), Twitter and Society (pp. 123-133). New York: Peter Lang.
- Markham, A. and Buchanan, E. (2012), "Ethical decision-making and internet research 2.0: recommendations from the AoIR Ethics Working Committee", available at: http://www.aoir.org/reports/ethics2.pdf (accessed 28 February 2015).
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Twitter's activities:

- Krikorian, R. (2014a), "Introducing Twitter Data Grants", [online], available at: https://blog.twitter.com/2014/introducing-twitter-data-grants (accessed 28 February 2015).
- Krikorian, R. (2014b), "Twitter #DataGrants selections", available at: https://blog.twitter.com/2014/twitter-datagrants-selections (accessed 28 February 2015).
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- Twitter (2014). Developer Agreement & Policy. Twitter Developer Agreement, retrieved January 31, 2015 from https://dev.twitter.com/overview/terms/agreement-and-policy.
- Twitter (no date). Guidelines for using Tweets in broadcast, retrieved January 31, 2015, from https://support.twitter.com/articles/114233.

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Library of Congress' activities:

- Allen, E. (2013, January 4). Update on the Twitter Archive at the Library of Congress. Retrieved January 31, 2015 from http://blogs.loc.gov/loc/2013/01/update-on-the-twitter-archive-at-the-library-of-congress/
- McLemmee, S. (2015). The Archive is closed. Inside Higher Education. Retrieved June 9, 2015 from: https://www.insidehighered.com/views/2015/06/03/article-difficulties-social-media-research
- Raymond, M. (2010). How Tweet It Is! Library Acquires Entire Twitter Archive. Retrieved January 31, from http://blogs.loc.gov/loc/2010/04/how-tweet-it-is-library-acquires-entire-twitter-archive/

Supplement: some useful references

Examples of Twitterdatasets shared publicly:

- CrisisLex on Github: https://github.com/sajao/CrisisLex/tree/master/data/CrisisLexT26/
- Hadgu & Jäschke 2014 dataset on Github: https://github.com/L3S/twitter-researcher
- ICWSM 2012 datasets: http://www.icwsm.org/2012/submitting/datasets/ ICWSM 2014 datasets: http://www.icwsm.org/2014/datasets/datasets/
- MPI-SWS (no date). The Twitter Project Page at MPI-SWS. Retrieved January 26, 2015 from http://twitter.mpi-sws.org/ (Archived by WebCite® at http://www.webcitation.org/6VsuuxQlU)
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