Altmetrics: Present and Future – Panel

Sponsored by: ASIS&T SIG/MET

Panel Committee: Judit Bar-Ilan[i], Cassidy Sugimoto[ii], Willian Gunn[iii], Stefanie Haustein[iv], Stacy Konkiel[v], Vincent Larivière[vi], and Jennifer Lin[vii]

ABSTRACT

Scholars are increasingly incorporating social media tools like blogs, Twitter, and Mendeley into their professional communication. Altmetrics tracks usage of these and similar tools to measure scholarly influence on the social Web. Altmetrics researchers and practitioners have amassed a growing body of literature and working tools to gather and analyze altmetrics and there is growing interest in this emerging subfield of scientometrics. In this panel, sponsored by SIG/MET, we will present results demonstrating the utility of alternative metrics from a variety of stakeholders: researchers, librarians, publishers and those participating in academic social media sites. We will discuss and debate the value and validity of such metrics with strong degrees of participation from the audience encouraged. Metrics, for better or worse, have had a presence in the lives of scholars--we will discuss the challenges and opportunities of altmetrics for the future.

Keywords
Altmetrics, bibliometrics, scholarly communication, social media.

INTRODUCTION
Scholars are increasingly incorporating social media tools like blogs, Twitter, ResearchGate and Mendeley into their scientific and professional communication. Because these and similar tools are online and public, they make visible the once-invisible practices of scholarly discourse, including bookmarking, annotation, and (particularly) informal discussion. The growing "altmetrics" movement seeks to assess scholarly impact in new ways using data mined from the social Web. Altmetrics are suggested to support faster, broader, and more diverse metrics of scholarly impact (Priem, Taraborelli, Groth & Neylon 2010).

Recent research on altmetrics has focused on the microblogging platform Twitter, social reference managers CiteULike (citeulike.org) and Mendeley (mendeley.com), and blogs. Mendeley and CiteULike are

Web-based alternatives to traditional bibliography management tools like EndNote and RefWorks. The number of users who have bookmarked or saved an article in these systems can be counted to assess that article's impact. Several studies have shown that these counts correlate significantly with citations, but medium correlations suggest that they do not reflect the same impact (e.g., Li & Thelwall: $r=.69$; Li, Thelwall, & Guistini, 2012: $r=.55$; Bar-Ilan, Haustein, Peters, Priem & Terliesner, 2012: $r=.448$; Priem, Piwowar, & Hemminger, 2012: $r=.4$). Haustein and Siebenlist (2011) demonstrated that tags assigned to bookmarked publications reflect a reader-specific view on journal content, differentiating it from previous indicators that measured the impact of the journals only for those who create subsequent journal content.

As scholarly use of Twitter grows (Priem, Costello, & Dzuba, 2011), it too has attracted significant altmetrics investigation. Priem and Costello (2010) showed that scholars cite scholarlyliterature on Twitter, and Eysenbach (2011), using a small sample of papers published in one journal, provided preliminary evidence that early "tweetations" can predict later citations. Shuai, Pepe, and Bollen (2012) compared Twitter mentions, arXiv downloads and citations. Letierce, Passant, Decker and Breslin (2010), Weller, Dröge, and Puschmann (2011) explored the use of tweets at conferences as a way to document informal scholarly communication. Long-form blogging has also been investigated as an altmetrics source; studies of Researchblogging.org, an aggregator of blog posts discussing peer reviewed articles, have shown that articles from high impact journals are reviewed more (Groth & Gurney, 2010; Shema, Bar-Ilan & Thelwall, 2012).

Alongside these research developments, a number of altmetrics-gathering tools have appeared; these take advantage of the fact that much altmetrics data is freely available in well-structured form via open Web APIs. These tools include http://citedin.org and http://altmetric.com. Impactstory (http://impactstory.org/), another such tool, aims to improve altmetrics collection and display, with the goal of supplementing and diversifying researcher and funder evaluations. Publishers and online scholarly networks have also been active in using and developing altmetrics. Two prominent examples of these are PLOS and Mendeley. Both are large and growing quickly: Mendeley has 2.3M

academics using the service and those researchers are collectively adding over a half a million documents every day to the service. Both companies are also building their growth in part around altmetrics. The growing open access publisher Public Library of Science (PLOS) displays altmetrics next to each of their online articles across its growing corpus of over 70k articles, allowing readers to assess their impact in a variety of different systems in real time. PLOS continues to expand its Article-Level Metrics program. For its part, Mendeley sees its future as a powerful tool for recommending literature to scholars, building on the altmetrics mined from its own database. With the rapid pace of research today, usage data from social Web services such as Mendeley could offer early indicators of popularity to scholars and funders well before citations begin to accumulate.

As an important hub of digital scholarly communications (Cummings, 1992; Atkinson, 1996; Borgman, 2000), libraries are essential in the move toward social media metrics of scholarly impact. An increasing number of scientific publications are now available open access through institutional repositories (IRs), and a discussion of altmetrics as a measure of "visibility" is necessary in this context (Scholtz & Dobratz, 2006)--especially as the number of OA mandates and IRs continue their exponential rise (ROAR, 2012). The three major IR platform developers (DSpace, BePress, EPrints) have responded to the need for usage statistics by developing means to display download metrics next to items, and there is a burgeoning interest in displaying a more diverse suite of metrics (Wacha & Wisner, 2011; Konkiel & Scherer, 2013).

Researcher interest in altmetrics has grown, as evidenced by a full-day altmetrics workshop in 2011, with a followup workshop in summer 2012 and a three-day Article Level Metrics workshop in 2012. However, there remains an unmet need to synthesize the perspectives of actors throughout the altmetrics ecosystem: social media services, libraries, publishers, altmetrics tools, and researchers. Not only does this panel have potential to introduce altmetrics to an interested audience, it also can push forward the integration of theory, use, and practice on this emerging research front. It also offers a platform for engagement in a critical discourse about the use and validity of these sources. Given ASIST attendees' strong tradition of interdisciplinarity and interest in both social media and scholarly communication, this would be an excellent venue for such a panel.

ISSUES TO BE DISCUSSED AND PANEL FORMAT
In this panel, we intend to present results supporting the feasibility and the value of alternative metrics from a variety of perspectives. Drawing on expertise and experience in their respective areas, panel members will discuss (for their area):

1. The current "state of the art" in altmetrics, along with expected altmetrics developments in the near future;
2. The types of "impacts" that altmetrics can measure;
3. Challenges in the use of altmetrics; and
4. Potential use of altmetrics in the future.

Each panel member will give a 10-minute talk presenting her perspective. Following the presentations, we will discuss with the audience the future of altmetrics and what the utility and validity of altmetrics for various stakeholders. The audience will take an active role in the second part of the panel. A Twitter moderator will allow remote audience members to participate in this, as well.

PANELISTS

Moderator: **Dr. Cassidy Sugimoto** is an Assistant Professor at the School of Informatics and Computing at Indiana University Bloomington. Her broad research interests are in scholarly communication, with a focus on quantitative indicators of disciplinary and implications for higher education. She will introduce each of the panelists and facilitate the interaction between the audience and panelists.

Panelists in alphabetical order:

Judit Bar-Ilan is professor at the Department of Information Science at Bar-Ilan University. She has a solid bibliometric background and will offer her insights on altmetrics. Altmetrics results have reached a "critical mass" where altmetrics cannot be ignored anymore and has to be taken into account alongside traditional bibliometric indicators. In her talk she will emphasize the need for careful data collection, data cleansing, the need for free access to data and the need for developing improved data collection and data analysis tools. The long term potential of altmetrics is influenced both by future technological developments and by its acceptance by the research evaluation community.

William Gunn William got his PhD in biomedical science from Tulane University, switched to private industry as research director for a biotech startup, and now straddles both as Head of Academic Outreach for Mendeley. William will discuss the challenges and future directions of the social metadata layer of Mendeley before showing examples of these metrics being used "in the wild". William's talk will focus on how altmetrics promote the concept of reuse as impact and enable more dynamic forms of scholarship that go beyond the traditional journal format.

Stefanie Haustein is a Postdoc at Université de Montréal and a bibliometric analyst at Science Metrix. In her PhD from the University of Düsseldorf she introduced the

analysis of social bookmarks as an indicator of journal usage as a substitute for download statistics, which are either unavailable for analysis or lack detail, and explored social tags as a reader-specific perspective on article and journal content. Stefanie will discuss the need for qualitative and quantitative evaluations of altmetrics and their sources to find out in how far they can be used for evaluation and retrieval purposes. Especially with tools like impactstory and Altmetric a systematic assessment is needed to explore which social media tool is used by whom (e.g., researchers, students, professionals, interested public) for what purpose (e.g., scholarly communication, teaching, marketing, informing the public) to analyze their validity and significance as impact indicators.

Stacy Konkiel is the Science Data Management Librarian at Indiana University Bloomington. Stacy will be speaking on the challenges and opportunities that lie ahead in implementing altmetrics tools in institutional repositories (IRs)--an as-yet underrepresented but valuable "market" to test the deployment and adoption of such metrics. In addition, she will discuss both the sociotechnical barriers to participation that exist for repository managers, and her university's experience implementing Altmetric.com in their DSpace repository.

Vincent Larivière Vincent Larivière is assistant professor of information science at the Université de Montréal, where he teaches research methods and bibliometrics. He is also an associate researcher at the Observatoire des sciences et des technologies and a regular member of the Centre interuniversitaire de recherche sur la science et la technologie. His work in the area scholarly communication has been published in journals such as the Journal of the American Society for Information Science and Technology, Scientometrics and Journal of Informetrics. Vincent holds a B.A. in Science, Technology and Society (UQAM), an M.A. in history of science (UQAM) and a Ph.D. in information science (McGill), and has performed postdoctoral work at Indiana University's School of Library and Information Science.

Jennifer Lin is a senior product manager at Public Library of Science for the Article-Level Metrics initiative. She received her PhD in political theory at Johns Hopkins, which has informed her knowledge and interest in how ontologies and techniques of measurement express and serve the underlying processes that support a system. She will be speaking on how altmetrics serves an innovative and disruptive techno-political end, all the while preserving the traditional scientific confidence in the aspiration and ability of "measuring what we want to know." She will extend this argument to discuss the ways in which PLOS's work as a publisher-advocate of altmetrics challenges the structural incentive system through its engagement with researchers, institutional decision-makers, other publishers, and funding bodies.

REFERENCES

Atkinson, R. (1996). Library Functions, Scholarly Communication, and the Foundation of the Digital Library: Laying Claim to the Control Zone. *The Library Quarterly,* 66(3), 239-265. Retrieved from http://www.jstor.org/stable/4309129

Bar-Ilan, J., Haustein, S., Peters, I., Priem, J. , & Terliesner, J. (2012). Beyond citations: Scholars' visibility on the social Web. . In *Proceedings of the 17th International Conference on Science and Technology Indicators*, Montreal: Science Metrix and OST, Eric Archambault, Yves Gingras and Vincent Larivière (Eds), pp. 98-109.

Borgman, CL. (2000) Digital libraries and the continuum of scholarly communication. *Journal of Documentation*, *56*(4), 412-430. doi: 10.1108/EUM0000000007121

Cummings, A. M., & Foundation, A. W. M. (1992). *University libraries and scholarly communication: a study prepared for the Andrew W. Mellon Foundation* (p. 205). Association of Research Libr. Retrieved from http://books.google.com/books?id=zrrgAAAAMAAJ&pgis=1

Eysenbach, G. (2011). Can tweets predict citations? Metrics of social impact based on Twitter and correlation with traditional metrics of scientific impact. *Journal of Medical Internet Research, 13*(4). Retrieved from http://www.jmir.org/2011/4/e123

Groth, P., & Gurney, T. (2010). Studying scientific discourse on the Web using bibliometrics: A chemistry blogging case study. *Presented at the WebSci10: Extending the Frontiers of Society On-Line, Raleigh, NC, USA*.

Haustein, S., & Siebenlist, T. (2011). Applying social bookmarking data to evaluate journal usage. *Journal of Informetrics, 5*(3), 446–457.

Haustein, S., Golov, E., Luckanus, K., Reher, S., & Terliesner, J. (2010). Journal evaluation and science 2.0. Using social bookmarks to analyze reader perception. In *Book of Abstracts of the 11th International Conference on Science and Technology Indicators, Leiden, The Netherlands* (pp. 117-119).

Konkiel, S. & Scherer, D. (2013). New Opportunities for Repositories in the Age of Altmetrics. *Bulletin of the American Society for Information Science and Technology*, February 2013/March 2013.

Letierce, J., Passant, A., Decker, S., & Breslin, J.G. (2010). Understanding how Twitter is used to spread scientific messages. In *Proceedings of the Web Science Conference, Raleigh, NC, USA*.

Li, X., & Thelwall, M. (2012). F1000, Mendeley and traditional bibliometric indicators. In: *Proceedings of*

the 17th International Conference on Science and Technology Indicators. Montréal, Canada. pp. 451-551.

Li, X., Thelwall, M., & Giustini, D. (2012). Validating online reference managers for scholarly impact measurement. *Scientometrics, 91*(4), 461-471.

Priem, J., Costello, K., & Dzuba, T. (2011). First-year graduate students just wasting time? Prevalence and use of Twitter among scholars. Presented at the Metrics 2011 Symposium on Informetric and Scientometric Research, New Orleans, LA, USA. Retrieved from http://jasonpriem.org/self-archived/5uni-poster.png

Priem, J., & Costello, K. L. (2010). How and why scholars cite on Twitter. In: *Proceedings of the 73rd ASIS&T Annual Meeting*. Presented at the American Society for Information Science & Technology Annual Meeting, Pittsburgh PA, USA. doi:10.1002/meet.14504701201

Priem, J., Piwowar, H., & Hemminger, B. H. (2012). Altmetrics in the wild: Using social media to explore scholarly impact. arXiv:1203.4745v1.

Priem, J., Taraborelli, D., Groth, P., & Neylon, C. (2010). Alt-metrics: A manifesto. Retrieved from http://altmetrics.org/manifesto/

ROARMAP. (2012). ROARMAP: Registry of Open Access Repositories Mandatory Archiving Policies. Retrieved from http://roarmap.eprints.org/

Scholtz, F. & Dobratz, S. (2006). International Workshop on Institutional Repositories and Enhanced and Alternative Metrics of Publication Impact, 20–21 February 2006, Humboldt University Berlin, Report. *High Energy Physics Libraries Webzine,* 13. Retrieved from http://library.web.cern.ch/library/Webzine/13/papers/2/

Shema, H., Bar-Ilan, J., & Thelwall, M. (2012). Research blogs and the discussion of scholarly information. *PLoS One*, 7(5): e35869. doi:10.1371/journal.pone.0035869.

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: e47523, doi:10.1371/journal.pone.0047523.

Weller, K., Dröge, E., & Puschmann, C. (2011). Citation analysis in Twitter: Approaches for defining and measuring information flows within tweets during scientific conferences. In M. Rowe, M. Stankovic, A.-S. Dadzie, & M. Hardey (Eds.), *Making Sense of Microposts (#MSM2011), Workshop at Extended Semantic Web Conference* (ESWC 2011), Crete, Greece (pp. 1–12). CEUR Workshop Proceedings Vol. 718.

Wacha, M & Wisner, M. (2011). Measuring value in Open Access repositories. *The Serials Librarian*, 61(3/4). Retrieved from http://www.tandfonline.com/doi/abs/10.1080/0361526X.2011.580423#tabModule

[i] Corresponding author, Department of Information Science, Bar-Ilan University, Israel, Judit.Bar-Ilan@biu.ac.il

[ii] School of Informatics and Computing, Indiana University Bloomington, sugimoto@indiana.edu

[iii] Mendeley, William.gunn@mendeley.com

[iv] École de bibliothéconomie et des sciences de l'information, Université de Montréal, C.P. 6128, Succ. Centre-Ville, Montréal, QC. H3C 3J7, Canada, stefanie.haustein@umontreal.ca

[v] Indiana University Bloomington, 1320 E. 10th St, Bloomington, IN, USA, skonkiel@indiana.edu

[vi] École de bibliothéconomie et des sciences de l'information, Université de Montréal, C.P. 6128, Succ. Centre-Ville, Montréal, QC. H3C 3J7, Canada, vincent.lariviere@umontreal.ca

[vii] Public Library of Science, 1200 Battery St, San Francisco, CA, jlin@plos.org