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**Conference Paper**

# Evaluating altmetrics acts through their creators – how to advance?

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One of the grand challenges in the meaningful use and interpretation of altmetrics is the heterogeneity of the acts behind them (Haustein, 2016). On the one hand, the diversity of the online interactions as a measure of scholarly impact is part of what makes altmetrics such a promising complement to traditional impact measures. On the other hand, this diversity makes the interpretation of altmetrics a difficult endeavor, as altmetrics derived from different social media platforms are shaped by significantly different premises. Although different actions on those platforms are in many cases fundamentally different regarding both the respective user's degree of involvement and intention, their scores are displayed side by side by altmetrics providers without much further explanation of their diverse premises. For example, bookmarking a publication in Mendeley has a substantially different meaning from writing a post about the same publication in Facebook.

In order to account for semantic differences between acts from different sources for altmetrics, efforts have been made to classify interactions regarding the required degree of involvement (Haustein, Bowman, & Costas, 2016) or their stakeholders' main use cases („NISO RP-25-2016, Outputs of the NISO Alternative Assessment Project - National Information Standards Organization", 2016). One largely unexplored premise that should be considered when interpreting altmetrics are differences regarding the platforms' userships – the users that are responsible for the interactions underlying altmetrics. Referring to past studies, the share of academics among the users interacting with scientific articles seems to vary considerably between platforms: while for example Jin-Cheon Na & Yingxin Estella Ye (2017) found a distinct predominance of non-academic users in discussions of psychological academic articles on Facebook, Vainio & Holmberg (2017) found researchers to be strongly represented among Twitter users responsible for tweeting scientific articles. And even for those platforms for which we can assume that the relevant share of interactions with scientific publications is committed by researchers such as Mendeley and ResearchGate (Sugimoto, Work, Larivière, & Haustein, 2016), there still might be considerable differences regarding the overall researchers' professional experience, productivity in terms of traditional publications or represented fields of research between individual platforms.

This hypothesis is supported by the findings of a recent online survey on researchers' social media usage. The survey was conducted by the authors of this abstract in the second quarter of 2017 with response data from about 3,400 researchers – most of them from the fields of social sciences and economics. The results exhibited statistically significant differences in the frequency of usage of certain kinds of social media-related acts between early stage researchers (PhD students and research assistants) and professors: while early stage researchers make more frequent use of download functionalities on various of the platforms that we asked about in the survey, professors more often engage in publication-related interactions of diverse kinds on Facebook, Twitter and LinkedIn. Those latter interactions include e.g. writing posts/tweets about academic research, commenting on posts/tweets about academic research or liking/favoring such posts/tweets. Another interesting observation made in the survey results is a moderately positive correlation between academic posting activities of researchers on Facebook, Twitter, LinkedIn and Google+ and their number of publications during the previous five years. The participants' number of publications in conferences, books and journals during the past five years and their frequencies of writing posts on each of the mentioned platforms were reported by themselves in the survey.

Findings like these could be used as a basis to specify classes of altmetrics which serve different purposes: download counts could for example be used to express a publication's scientific impact in a way that emphasizes its relevance among early stage researchers, while the number of tweets about an article can be considered as a metric which better reflects that article's impact among professors/senior stage researchers. If done in a sound manner, such a differentiation would allow for more precise applications of altmetrics. It could for example allow for altmetrics aggregations that more accurately convey a scientific product's relevance among a specified target group that is of particular interest to the observer, be it for scientific or economic reasons. Also it remains impossible for altmetrics to fulfill the task of painting a truly representative picture of a publication's impact among researchers as long as biases like those described above are not known and thus not handled adequately.

The idea to also consider the signals' origins is not new to scientometrics – a citation-based example for this is the Eigenfactor, an alternative to the traditional journal impact factor that uses a network centrality measure to account for the importance of a journal in the citation network to better reflect the significance of its outgoing citations. An example from the area of altmetrics are the maps showing geographical user distributions provided by *Altmetric Explorer*, which also enrich impact data with information on the originators of that data.

The differentiation between the semantics of acts in altmetrics – and their weighting based on this differentiation – leads to many questions regarding a sensible methodology and also its overall desirableness. At altmetrics17, we would therefore like to discuss the following questions:

- Is weighting altmetrics based on their originators a reasonable and desirable approach? Or could this way of using altmetrics in the end hurt the ideal of providing a more comprehensive and democratic way of measuring scholarly impact?
- What might be meaningful platform-related factors to base different "classes" of altmetrics upon?
    - A platform's relative share of users with scientific background?
    - Its degree of coverage among researchers from a certain discipline?
    - Its users' average degree of scientific experience?
    - Its users' average productivity by bibliometrical means?
    - Geographical aspects, like its relative popularity in a certain area of the world?
    - Any other factors?

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