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A Visible Job to Do:
*Some thoughts on opportunities for libraries concerning
academic professional metrics*

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As academic publishing models continue to evolve and as open access requirements for researchers gain momentum, libraries at colleges and universities should not overlook opportunities to enhance their valued services, especially where metrics are concerned. Measuring success qualitatively and quantitatively is of great importance to leadership in the academic environment, connected at the most basic level to needs for promotion and tenure review for individuals. Likewise, each institution as a whole—and often some of its component schools—have similar needs to measure performance for accreditation purposes. From recent anthropological studies of academia (Harley, Acord, Earl-Novell, Lawrence, & King, 2010), it is clear that professors tend to create themselves out of their graduate students, so inertia is significant in this system. Current evaluative measures of quality and quantity have been rigid for generations, but new media, new tools, and new expectations surrounding scholarly communication represent a significant shift that is now underway.

As librarians have begun to create repositories for researchers on their campuses, and as we populate these archives with data sets, articles, and other professional work, we are able to manage and monitor such points as usage and citation statistics. Libraries could combine this information with professors' self-profiles and available external statistics to become the definitive source to produce reports needed for promotion and tenure review dossiers. This paper will provide some deeper details later, but a catalog of some of our developing tools might be appropriate here to give an idea of the range of possibilities:

- It is librarians who specialize in name disambiguation via “authority control” lists (tools like ORCID¹ and VIAF², for example).
- It is librarians who have devised approaches such as “Functional Requirements of Bibliographic Records” (FRBR)³ to portray the many faces of expressing an idea, by which we could compile usage of published, pre-print, or post-print versions of a work, or combine those if need be.
- It is librarians who have helped bridge cross-disciplinary divides (Garca-Millian, et al., 2013) with researchers developing tools like VIVO⁴ to monitor chains of scholarly connections via the Resource Description Framework (RDF).⁵
- It is librarians who have put forth the concept of altmetrics⁶, an attempt to count ideas at some smallest, cellular level and then measure uptake and usage, so highly applicable to social media.
- It is librarianship as a profession that attempts comprehensive subject coverage with ontologies that aid managerial responsibility for collections of all types, with staff breadth and depth to support curricula all across our campuses.
- It is part of the established professional ethic of librarians to carefully navigate and respect privacy issues with our researchers and patrons, and since social media especially are rife with these issues, they require the great care our profession takes

Just as accountants and tax attorneys earn decent livings by helping individuals and businesses navigate governmental taxation structures, so could academic libraries become the trustworthy, third-party source for expressing professional measurements for the purpose of academic accounting. As faculty members turn to their institutional research repositories for depositing data sets, articles, and other research materials, the local institutions will be more in a position to compile relevant citation patterns and other usage, which can include statistics not just from the local repository, but also from other citation aggregation resources that the library often is also responsible for. Library specialists can gain expertise in navigating these local and other sources for metrics to synthesize into reliable portrayals of scholarly progress. As these qualitative and quantitative reports become part of what is expected of the library, this service in turn can become yet another needed function and therefore another reason to appreciate and support the institution’s library system. Combined with visualization techniques that our repositories are beginning to develop as a specialty, we could supply tailored dashboard infographics that tell the story of an individual’s or a group’s status. As libraries manage and monitor repositories on our campuses, we could become trusted partners in statistical aspects of running our parent institutions.

¹ See <http://orcid.org>

² See <http://viaf.org>

³ See <http://www.loc.gov/cds/downloads/FRBR.PDF>

⁴ See <http://vivoweb.org/>

⁵ See <http://www.w3.org/RDF/>

⁶ See <http://altmetrics.org>

The Case for a Change

That there is a crisis in the scholarly literature publishing process is widely documented and painfully obvious. Library and scholarly professional organizations have been quite vocal in calling attention to troubling trends over the past decade or so. Notable early pieces on the matter include those from the American Historical Association (or AHA⁷) (MacPherson, 2003), from the American Council of Learned Societies (or ACLS) (Alonso, Davidson, Unsworth, & Withey, 2004), and from the Modern Languages Association (Ad Hoc Committee on the Future of Scholarly Publishing, 2001). From this broad opportunity for change, libraries can seize the moment to fashion infrastructural improvements from what may seem to many a disaster in the making. Potentially helpful developments since this trend began gaining notice include funding agency actions externally and, internally, steps taken within the scholarly community. Three of the most significant funder actions in the U.S. have been:

1. the Public Access requirement by the National Institutes of Health,⁸ initiated in 2008, which requires that funded projects' principal investigators make their findings openly available within 12 months after publication
2. the Data Management Plan requirement by the National Science Foundation,⁹ from 2010/11, which requires principal investigators to explain in their proposals how they will make their findings available over time, including open access as appropriate
3. the Obama Administration's 2013 Open Data Policy¹⁰ which requires that U.S. government data be made available in open formats to the extent possible, given privacy, confidentiality, and security concerns

Within the scholarly realm, new tools and communities around them are enabling some new types of metrics. Institutional repositories (IRs) are probably in the closest circle around the current functions of libraries; metrics from these resources are producing meaningful measures, thanks in no small part to the funder requirements listed above. Beyond the walls of libraries, there are numerous tools that produce analogous metrics which could be folded in with the IR data for more comprehensive coverage. FigShare, Mendeley, Zotero, and other similar tools represent communities built around content. Communities built around scholars themselves and their interests represent another circle outward from what libraries do, but they are still highly relevant, and include efforts by Google (profiling in Scholar and Plus) and Microsoft Research, especially where identifiable, accessible profiles can help connect people and ideas. Other profiling efforts at the institutional and consortial levels are also cropping up, often bundled with tools such as repository software, like Islandora or BePress' Scholar Works, or with grant-locating tools, like Pivot. For all of these, there is a crying need for metadata librarians to assist in managing all the disparate profile pieces with

⁷ See <http://www.historians.org/perspectives/issues/2003/0310/0310pre1.cfm>

⁸ See <http://publicaccess.nih.gov/>

⁹ See <http://www.nsf.gov/eng/general/dmp.jsp>

¹⁰ See <http://www.data.gov/>

authority control mechanisms like ORCID or VIAF, to pull together the correct information per identity. In turn, blogs, FaceBook, Twitter, YouTube and other social media tools represent further expressive capabilities that should have some metric gathering component for the useful purposes they serve. A promising effort to connect the realms of research content with researchers utilizing the semantic web's hopeful RDF approach is VIVO, currently under the aegis of DuraSpace. For all of these, a comprehensive system of metrics deserves attention. Still, the purpose of this paper is not to flesh out such a detailed, comprehensive structure, but to give some possible, purposeful end product of those numbers for a particular application in academia.

The Dashboard: Overview

Below in Figure 1 is a draft graphic report structure, which across a spectrum of activity attempts to convey answers to the three primary questions crucial to the decision-making process for the academic context, whether at the individual (e.g., tenure) or organizational (e.g., accreditation) levels:

1. How much did you do? (Quantity)
2. How good was it? (Quality)
3. Was it a significant contribution to your field? (Pass/Fail)

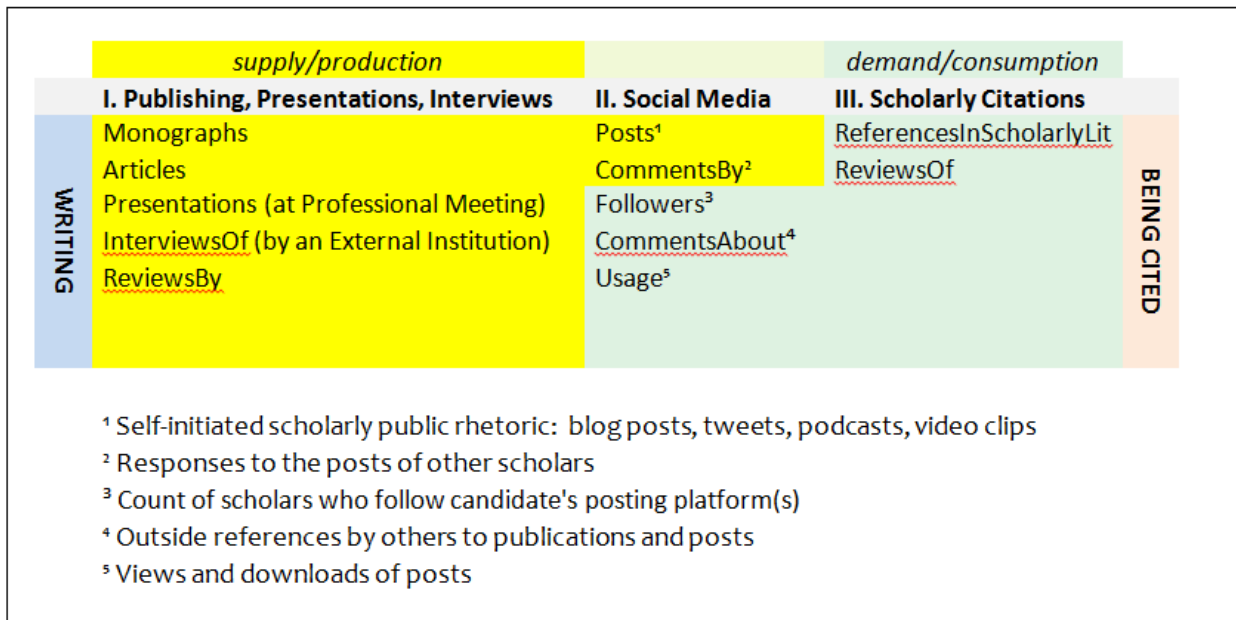


Figure 1

The Dashboard: Details

To begin with what has been the most customary feature bibliographically in the PTR process, the new dashboard report should naturally include traditional bibliographic expectations, categorized in the illustration as “I. Publishing, Presentations, & Interviews.” Monographs and journal articles, as the customary and primary modes of academic discourse, are not likely to disappear from evaluative criteria, so we may feature them in the first position on the report. Administrators will have some quantitative benchmarks in mind for their decision-making process, while the publication aspects of these works speak to the qualitative angle. To measure quality in a more standardized way, the concept of impact factor needs to be recalibrated for journals and publishers as well into a simplified, common scale of five levels. As qualitative measures go, five stars is a very approachable benchmark in human interaction, widely used across industries and especially so in the familiar consumer marketplace. To facilitate comparisons, the qualitative factor will probably need to be assigned *per discipline* per journal, and not just once per journal or press. Under such an arrangement, a single journal could have multiple impact factors, depending on the subject at hand. Editors would have to assign the category upon an article’s acceptance for publication, perhaps based on authors’ requests, but with the editorial staff as final arbiters. The reason for this granularity is, if we consider extremely broad interdisciplinary studies, like nanotechnology on the STEM (Science, Technology, Engineering, and Mathematics) side, or human rights on the humanities and social sciences side, there exist component specializations that may require distinguishing separate details about quality in their sub-disciplines. Obviously, such a system would require high maintenance, with significant ontological design and development work, but this is where library metadata staff have much to offer. If handled collaboratively, a system could be more easily designed and put into place. Moreover, collaboration would serve to ensure fairness through transparency and distributed workloads. The current standard, JIF (Journal Impact Factor), has come under increasing criticism of late,¹¹ so the time may be ripe for just such an overhaul.

To skip to the far right on the dashboard, to the “III. Scholarly Citations” category, it should be within reasonable expectations to evaluate just how a scholar’s academic discourse is received by peers to some level of consensus. In the current networked context, collecting these data points is a more automatable task than in years past, so it should be a trivial step to compile these components of the needed metrics, if only we put in place the appropriate mechanisms. With the citations compiled, it would be possible to reference the impact factors of the publications where they occur and then depict graphically the count of the citations on one axis, along with their individual impact values on the other, as in Figure 2 below:

¹¹ See the “San Francisco Declaration on Research Assessment,” at: <http://am.ascb.org/dora/>

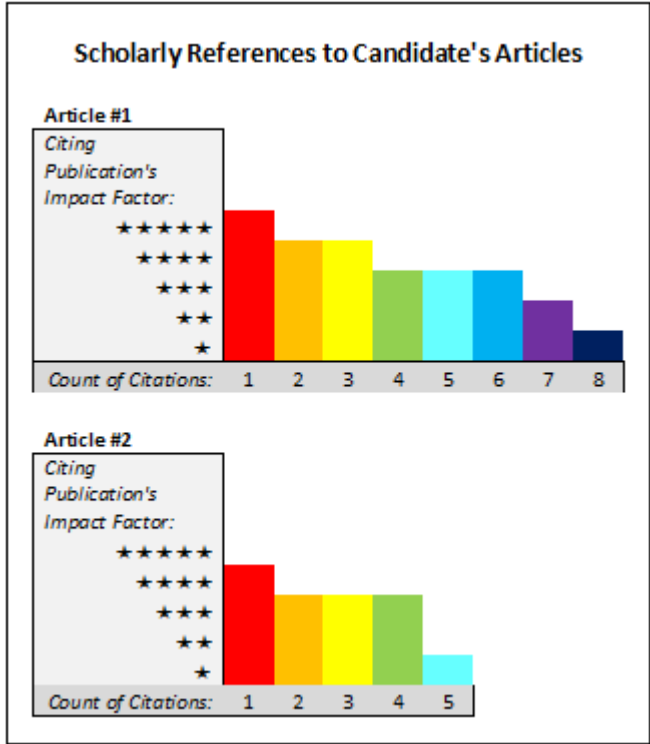


Figure 2

Finally, the middle column in Figure 1, labeled “II. Social Media,” is detailed to some extent in that illustration itself. As the color coding signifies, this category features a mix of writing (posts and comments) and online interaction with colleagues. Posts would include any self-initiated blogging, microblogging, podcasting, or the like. Comments would tally the scholar’s responses to the posts of others. For interactivity metrics, several aspects might be included. Colleagues who follow the candidate’s social media posting platforms could be counted, along with comments of others in response to posts, as well as more common web usage statistics, like views or downloads of posted material. If such an accounting system were to be broadly implemented, it would be possible to establish group metrics, such as a ceiling or mean across a discipline’s community. Figure 3 illustrates that potential graphically:

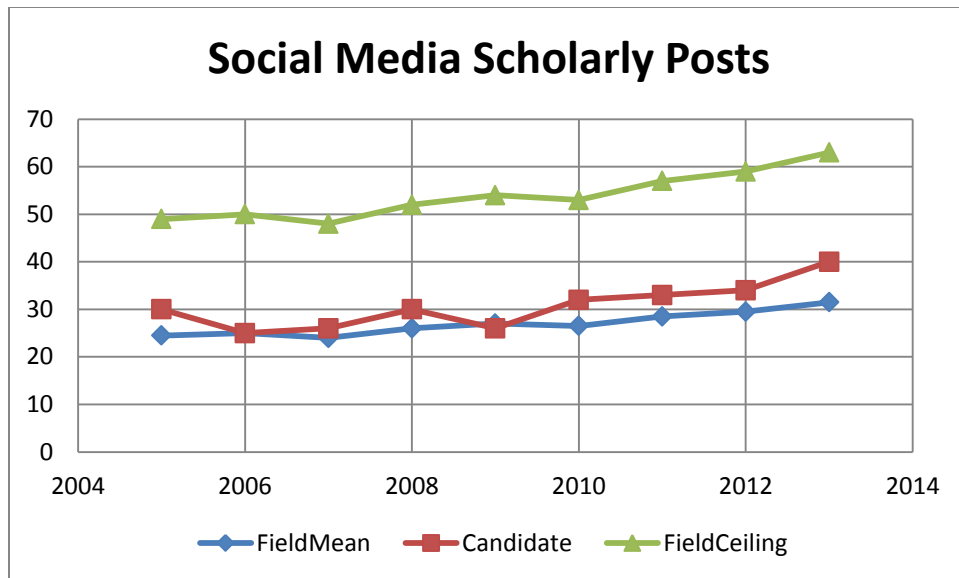


Figure 3

Finally, it is in the social media category that FRBR, mentioned earlier, could play a role: since a conceptual piece could start as a tweet, grow into a blog post, then expand into an article or book, which may have accessible pre-print and published versions, scholars will want to have statistics (especially for posts and usage) aggregated across all of these. It would be through FRBR that such accounting could be accomplished, registering part-to-whole and parent-child relationships and disambiguating or combining them as needed.

Benefits

The benefits of undertaking this metrics task would be that it could more fully and fairly account for the quantity and quality of scholarly work across the broad spectrum of media that now convey our intellectual discourse. Turning to an institution's library for such reporting could standardize the process and perhaps make it fairer by having the aggregation done by a disinterested third party, as opposed to by the scholars themselves, or by departmental staff. Moreover, since libraries are closely attuned to respect for privacy as a professional ethic, that would serve as a great place for some of that decision-making which is sure to come up in this effort. In turn, such a process would get libraries more involved in their universities' critical administrative processes and thereby strengthen them as units of the greater institution.

Challenges

As mentioned at the very beginning of this paper, the inertia inherent in an established, change-averse culture is daunting. No less challenging are the technical issues to enable accurately recording what matters vs. what does not. Moreover, the media platforms are a moving target since they develop, gain acceptance, evolve, rise, and fall frequently over time. Social media projects done well require regular maintenance. Since this task would be so demanding of staff time, the creation of a new position to fulfill this role would be a significant barrier to overcome in this age of permanently shrinking budgets. Still, the potential economies of scale gained by aggregating this metrics process, which is such an important feature of academic lifecycles, make it worth considering.

Conclusion

In brief, I propose that academic research libraries diversify the portfolio of services they provide to their campuses by including new dashboard-style reports for promotion and tenure review (PTR) applications and similar ones for institutional accreditation purposes. In doing so, academic research librarians will become more tightly knit into the communities they serve as administrators will come to rely on their expertise with bibliographic citation, qualitative evaluation of scholarship, and usage statistics.

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