Major challenges on authorship and concept of authorship - why is something more needed on contributorship?

This manuscript (permalink) was automatically generated from data2health/contributorship@573a22f on January 16, 2020.

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Contributorship: making the contribution the focus, rather than the resulting paper

Authorship versus contribution

While the definition and the exact role of an author is somewhat ambiguous, tracking contributorship in publications is intended to more explicitly define and give credit to contributors to a work. Contributors can contribute to a study and/or publication in various ways, and may not necessarily be involved in the writing or revision of the manuscript. Traditional roles of contributors may include the planning, conducting, and reporting the work. Non-traditional roles may be more varied. For example, a primary technician may perform assays such as human brain autopsies, whole brain hemisphere sectioning, immunohistochemical staining, stereological analysis and and assist with publication preparation. Or a librarian may deliver invited lectures and served as a consultant for libraries to help them establish clinical and translational research support services. These non-traditional roles can be essential to the success of scholarship, but are often not credited with authorship as often as more traditional roles.

Making contributorship work in systems

To address the need for a more nuanced characterization and contextualization of contributions, a couple efforts have developed standardized terminologies for contributor roles. The CRediT taxonomy is a high level standardized vocabulary that contains 14 roles for use in representing scholarly contributions to research outputs [1,2]. The Contributor Role Ontology (CRO) was developed as an extension of the CRediT taxonomy, and consumes and expands the contributor roles to provide a structured representation of contribution roles in research and scholarship, which is designed for crediting persons or organizations. The CRO is an open-source, community-developed ontology that currently contains over 50 classes [3]. Contribution Role Ontology was developed by the FORCE11 Attribution Working Group. As noted in the paper by Ilik et al. “this ontology extends the contributions to scholarship beyond manuscript authorship to capture the broadening of researchers’ participation in scientific discoveries that have not been previously recognized by traditional measures of scholarly impact” [4]. The work done by the FORCE11 Attribution Working Group along with the OpenVIVO Task Force members at the time included reviewing existing scholarly contribution taxonomies and exploring ways to extend the CRediT taxonomy to create a prototype contributorship model that covers a wide selection of fields of research. The CRO can be used with the Contributor Attribution

Model (CAM) - an ontology-based specification for representing information about contributions made to research-related artifacts [5].

Incentives to use contributions

[JC: are these potential incentives, or does it really works this way, if the latter, is there data to back it up, if the former, this should be rephrased]

Benefits to the community include: better discovery and selection of team members for team-based science, the creation of a directory of experts that can be used for a variety of needs (treating patients, speaking at a conference or to the media, etc.), impartial selection and nomination for awards and committees, more equitable decisions related to promotion and/or tenure, and the ability to illuminate and eliminate gender disparities in research roles (see citation: 6). Benefits to the Individual include: increased recognition and validation of current skills and expertise, motivation to build upon skills or gain new skills, ease of building your professional brand (i.e. describing or explaining expertise or skills to community), and increased ease of finding and engaging your network of colleagues and experts.

Expanding measures of success

It should be noted that improving the characterisation/contextualisation of contributions, will not automatically improve the evaluation processes. The reward system of science has for so long been solely reliant on authorship and the current infrastructure that is used for hiring and promotion is not yet fully prepared to use, and benefit from descriptions of contributions. As long as scientists are being hired and promoted based on the number of publications, impact factor of journals where they published and positions in the byline, even more accurate identifiers of contributions would not improve scientific evaluation and promotion processes. Even researchers based in non-academic institutions report similar patterns in evaluation and promotion [7]. In other words, as long as institutions have not integrated accurate models of contribution such as CRediT and CRO into their workflows, journals' adoption alone is not going to benefit the scientific community.

Manubot Experience and Evaluation

In an ideal world, we would have frictionless workflows that make it easy to introduce credit and attribution to authors and beyond. In addition, workflows would allow seamless ways to promote preservation and discoverability of work. Tools are being developed that help address this issue, such a Manubot 8, a workflow and set up tools that promotes open and automated workflows for writing manuscripts. This commentary was generated using manubot. A great advantage of using Manubot was that is was designed to track author contributions and made the contributions more transparent. [**Add something here about using CRO? Manubot should be be able to track our contributions in the yaml file too?**] [**JC: I am not sure that it actually works, github functionality is only counting commits number, not importance, and manubot would only track work done during manuscript writing. To get something automated we would need something much more complicated, where (for example) data would be published with a list of contributor, that list being imported into the manuscript while linking the manuscript to the data.**] Manubot trackers author metadata in a yaml file, which can be transfered to other manuscripts, saving time with collecting author details each time you write a manuscript. [**Can it be imported into author submission systems too, so we don't have to fill out the authorship sections in journals? That would be amazing!**] [**JC: very little portability of the yaml actually, not even to other system using yaml to enter author information. One would need a codec to translate the list from one format to another, see github.com/open-science-promoters/contibutor_manager**] Manubot incorporates a simple workflow for tracking citations, and automatcally creates a reference list, removing the need to use a reference manager. [**putting citation just with doi has also its**

disadvantage, I do prefer a solution using a bib file (produced by a reference manager) and an author-date call to the bib file, otherwise one always need to click to see what the publication actually is] Manubot is more technical to use compared to more commonly used authoring tools like Microsoft Word or Google Docs. All of the authors were required to have a GitHub account and some basic familiarity with using GitHub, and with writing in Markdown. While Manubot tracked the contributions, the contributions are skewed towards users who are more familiar and comfortable with using GitHub and writing in Markdown.

Some features that would be nice to see in Manubot: [NV: not sure if these already exist? `@dhimmel`] - A way to tag other users. In google docs, you can +email someone, and they will get an email that you mentioned them in a comment, and can assign them tasks in the doc - is there spell check integrated somewhere? - can the yaml file with author metadata be converted to a spreadsheet, for easier viewing? Can the authors be reordered/alphabetized?

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