Fenner, Martin, "Scientific Attribution Principles"

Fenner, Martin - Scientific Attribution

Principles

1. Proper assigning of credit for scholarly work requires the ability to uniquely identify specific contributors to research.

The unique researcher identifier should support the creation of a clear and unambiguous scholarly record. The identifier should transcend institutions, disciplines, and national boundaries. The identifier should be trustworthy and should be persistent over time [1]. The identifier should interoperate with researcher identifier systems that already exist, but are more limited in scope.

2. Proper assigning of credit for scientific work requires the ability to uniquely identify specific scientific contributions.

A scientific contribution system should cover the full range of scholarly activities, including but not limited to publications, patents, and research datasets. Unique identifiers are needed to use these scientific contributions for attribution. The level of detail needed for attribution will depend on the specific scientific contribution. The scholarly activities that need a unique identifier because we see them as significant may change over time.

3. In order to create the scholarly record, scientific contributions have to be unambiguously assigned to specific contributors.

A system of unique researcher identifiers should also hold information about their scientific contributions, just as databases for publications, research datasets, etc. should hold information about the researchers associated with them. The scholarly record should also contain information about who claimed these associations (researcher, institution, journal, etc.). To foster data exchange between these systems, and to facilitate reuse, all data should ideally be made available via download and/or API with a Creative Commons Zero or similar license appropriate for data.

4. Systems that measure and evaluate scientific contributions can and should be separate from the databases that hold the scholarly record.
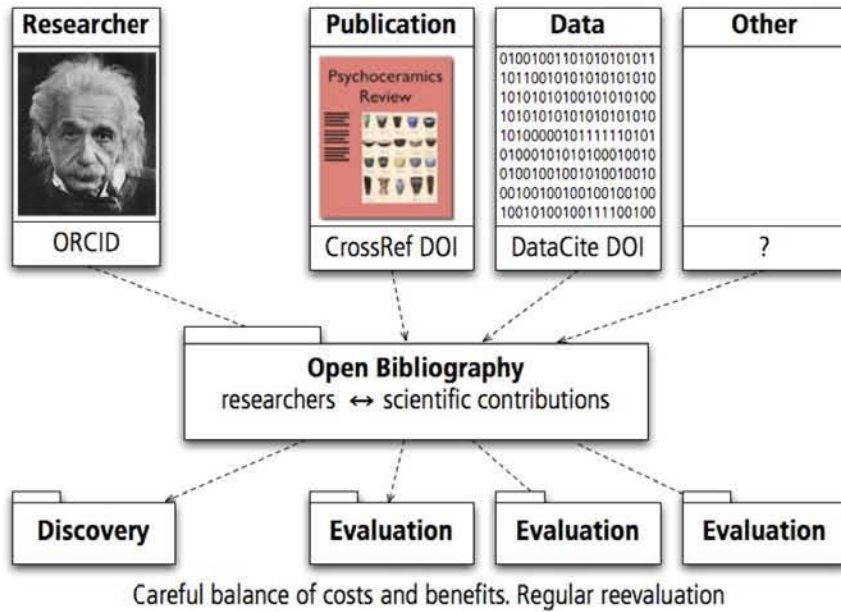
As long as all information in the scholarly record is openly available (see above), systems that measure and evaluate this information can and should be distinct. The tools for measuring scientific impact are still evolving, and competition in this area will increase their usefulness. In addition, we can not expect to ever have a single measure that is appropriate for all disciplines and use cases.

5. Tools that measure scientific impact should focus on reuse.

The impact of scientific contributions should not be measured indirectly, e.g. by looking at the journal of a publication or the researchers/institutions that were involved. We now have the technology to measure the impact of scientific contributions directly. Whenever possible, this should be done based on reuse, including but not limited to citations and reuses of research data.

6. Credit systems for scientific contributions should be reevaluated on a regular basis.

All currently used measures of scientific impact have limitations [2], and changes in incentives can alter the way research is performed [3]. Scientific attribution uses resources, including time and money that could be spent doing research. The level of detail and required researcher participation should therefore be carefully considered. Our requirements and the available tools will change over time. Any scientific attribution system should therefore be reevaluated from time to time, and adjusted if necessary.

Careful balance of costs and benefits. Regular reevaluation

1. Credit where credit is due: The Open Researcher and Contributor ID (ORCID). *Nature*. 2009;462:825. doi:http://dx.doi.org/10.1038/462825a

http://dx.doi.org/10.1038/462825a2. **Bollen J, Van de Sompel H, Hagberg A, Chute R.** A principal component analysis of 39 scientific impact measures. *PLoS One*. 2009 June;4(6):e6022+. doi:http://dx.doi.org/10.1371/journal.pone.0006022.

3. **Lane J.** Let's make science metrics more scientific. *Nature*. 2010;464:488-489. doi:http://dx.doi.org/10.1038/464488a.