Understanding Attribution:
creating equitable models in the scholarly ecosystem

FORCE 2017 Research Communication and e-Scholarship Conference | Berlin, Germany
Date: Wednesday, October 25, 2017
Time: 3:00 – 4:30 pm (15:00-16:30)
Location: Room 4

Join us in Google Docs: https://goo.gl/HAktCs
On social media use hashtags: #FORCE2017, #attribution
Who we are...

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Learning Objectives

- Gain an understanding of attribution and contribution in the scholarly ecosystem
- Discuss and analyze current attribution and contribution models and efforts
- Brainstorm and consider the components of a system to capture attribution and contribution
- Engage in activities that broaden understanding of the application of ontologies
- Review the work of the Force11 Attribution Working Group and discuss future efforts

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Agenda

15:00 - 15:20  **Review the importance of proper attribution**
Proper credit for scholarly work creates a better record and inventory of expertise and experience and sets the stage for productive and trusted collaborations.

15:20 - 15:50  **Discuss the current attribution environment**
Topics to be covered include: groups in the contribution/attribution environment, their work, creating an equitable environment in the scholarly ecosystem, limitations on capturing attribution.

15:50 - 16:20  **Explore attribution and credit in action**
Each group will have time to review scholarly objects and consider a basic data model for attribution.

16:20 - 16:30  **Wrap up**

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The importance of proper attribution

Proper credit for scholarly work creates a better record and inventory of expertise and experience and sets the stage for productive and trusted collaborations.
Reviewers on hiring committees and grant funding applications usually don’t have the time to read each publication and assess author contributions, and hence rely, to different degrees, on the position of your name on the author list for each publication.
Strain under current attribution model

“The practice of explicitly giving authors equal credit is increasingly common in original research publications. Scientific journals should consider providing guidance for authors regarding this practice.”


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Attribution gone awry (1)

Contribution to Science:

“...this study introduces Nrf2 as a novel therapeutic target for [Fragile X Syndrome (FXS)] and shows that restoration of this novel target appears as promising therapeutic approach for FXS.”

Retracted Over Dispute on Author Order:

The retraction has been agreed as all authors cannot agree on a revised author order, and at least one author continues to dispute the original order. In this case, the original article is being retracted on the grounds that the journal does not have permission to publish.
Attribution gone awry (2)

Contribution to Science:


Dispute:

Who really made Dolly? Tale of British triumph descends into scientists' squabble

• Lead researcher admits his role was overstated
• Technicians claim their contribution ignored


Photo courtesy of The Roslin Institute, The University of Edinburgh
But the debate does not end there. One member of the Dolly team, a technician called Bill Ritchie, along with Karen Mycock, another technician, was responsible for the intricate and arduous egg and cell manipulation needed to create each clone. At the end of each day, the few successfully cloned embryos were collected and transplanted into ewes. "There were two people doing nuclear transfer that day and it could have been either who created the embryo that made Dolly," said one scientist close to the project.

Mr Ritchie argues that his and Ms Mycock’s names should have appeared on the list of authors of the 1997 research paper. Instead, the technicians both appear in the small print of acknowledgements at the end of the report’s list of references.


- “It's one of those scenarios. You have a hierarchy of employment and you need the job. They dictate the rest.”

- Many scientists say technicians are merely doing what they are told, while the credit - the all-important name on the paper - goes to those whose intellectual thought made the research a success.

- “You get some papers where the authors haven't done a scrap of work themselves, it's all down to the technicians acknowledged at the back”

- "It all comes down to how far down the list you want to go"
Narrowly defined models cause problems

"...incentives for academic scientists have become increasingly perverse in terms of competition for research funding, development of quantitative metrics to measure performance, and a changing business model for higher education itself."

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**Table 1.**

<table>
<thead>
<tr>
<th>Incentive</th>
<th>Intended effect</th>
<th>Actual effect</th>
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</table>
| "Researchers rewarded for increased number of publications" | "Improve research productivity; provide a means of evaluating performance." | "Availabe of necessity, incremental papers; poor methods and increase in false discovery rates leading to a "natural selection of bad science" (Smulldin and McPhedran, 2016); reduced quality of peer review."
| "Researchers rewarded for increased number of citations." | "Reward quality work that influences others." | "Extended reference lists to inflate citations; reviewers request citation of their work through peer review."
| "Researchers rewarded for increased grant funding." | "Ensure that research programs are funded, promote growth, generate overhead." | "Increased time writing proposals and less time gathering and thinking about data. Overselling positive results and downplay of negative results."
| Increase PhD student productivity | Higher school ranking and more prestige of program. | Lower standards and create oversupply of PhDs. Postdocs often required for entry-level academic positions, and PhDs hired for work MS students used to do. |
| Reduced teaching load for research-active faculty | Necessary to pursue additional competitive grants. | Increased demand for untenured, adjunct faculty to teach classes. |
| "Teachers rewarded for increased student evaluation scores." | "Improved accountability; ensure customer satisfaction." | "Reduced course work, grade inflation."
| "Teachers rewarded for increased student test scores." | "Improve teacher effectiveness." | "Teaching to the test; emphasis on short-term learning."
| "Departments rewarded for increasing U.S. News ranking." | "Stronger departments." | "Extensive efforts to reverse engineering, pause, and cheat rankings."
| "Departments rewarded for increasing numbers of BS, MS, and PhD degrees granted." | "Promote efficiency; stop students from being trapped in degree programs; impress the state legislature." | "Class sizes increase; entrance requirements decrease; reduce graduation requirements."
| "Departments rewarded for increasing student credit/contact hours (SCH)." | "The university's teaching mission is fulfilled." | "SCH-maximization games are played; duplication of classes, competition for service courses."

Modified from Regent (pers. comm., 2015) with permission.

Representing diverse contributions

Non-traditional role:

As **primary technician**, I performed human brain autopsies, whole brain hemisphere sectioning, cholinergic and immunohistochemical staining, stereological analysis and publication preparation. During the years I worked in the lab, **almost 200 papers were published**, 40 of which I supplied technical expertise.

Non-traditional outputs:

My published work in this area is modest, however I have delivered over **30 invited lectures** and served as a consultant for dozens of libraries helping them establish clinical and translational research support services. I also **teach the only formal course** dedicated to these topics at a school of information science. I have also **developed an assessment model** to help uncover meaningful outputs and indicators of impact.

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Benefits to the Community

- better discovery and **selection of team members** for team-based science

- creates 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

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Benefits to the Individual

- increase 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)
- ease of finding and **engaging your network** of colleagues and experts

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Solutions from the community: Project CRediT

“The Contributor Roles Taxonomy project (Project CRediT) emerged to address recognition that the concept of ‘authorship’ in producing scientific scholarly output is outdated and no longer fit for purpose.”

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Force11 Attribution Working Group

“This working group was formed out of the FORCE2015 "Contribution and Attribution in the Context of the Scholar" Workshop held Sunday, January 11, 2015 in Oxford.

The goal of this working group was to work on attribution implementation for any research products (including publications, datasets, data standards, research resources, etc.).”

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The current attribution environment

Topics to be covered include: groups in the contribution/attribution environment, their work, creating an equitable environment in the scholarly ecosystem, limitations on capturing attribution
Activity: the current attribution environment

1. Split the room into small groups of 2-4 people.
2. Each small group will be assigned one of the attribution projects listed below.
3. The small group will have 10 minutes to discuss the questions provided on the next slide.
4. The small group will report back to the larger group when done.

- Authorship or Contributor, according to the International Committee of Medical Journal Editors (ICMJE) (http://www.icmje.org/recommendations/browse/roles-and-responsibilities/defining-the-role-of-authors-and-contributors.html)
- Mozilla Badges (https://openbadges.org/)
- Discogs Credit List: https://www.discogs.com/help/creditslist
- SCoRO, the Scholarly Contributions and Roles Ontology (http://www.sparontologies.net/ontologies/scoro/source.html)
- Force 11 Attribution Working group (https://www.force11.org/group/attributionwg)
- Project Credit (http://docs.casrai.org/CRediT)

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Small group discussion questions

1. How is this group related to the contribution/attribution environment?

2. What work has this group done (currently or in the past) to contribute to the attribution environment?

3. How does the group’s work contribute to an equitable environment in the scholarly ecosystem?

4. Do you feel the group’s work poses any limitations on capturing attribution?

5. Conversely, does the group's work expand your understanding of capturing attribution?

6. Does the group describe the benefits of capturing attribution, and if so, how do they describe them?

7. Can you find any examples of their work being used in practice?

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Explore attribution and credit in action

Each group will have time to review scholarly objects and consider a basic data model for attribution.
Activity: Explore attribution and credit in action

Description:
Split the room into groups of 2-4 people. Each group is given 20 minutes to explore a project and answer some provided questions.

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Small group activity

Select a project:
Internet Movie Database, Full cast and crew of Star Wars IV: http://www.imdb.com/title/tt0076759/fullcredits?ref_=ttco_sa_1

Answer the following questions:
1. Make a list (or review an already existing list) of the roles involved with the project.
2. Make a list of all the objects or outputs involved with the project.
3. Discuss in your small group
   a. Are there any issues related to granularity with description of roles, objects, or outputs?
   b. In what situations should these roles be acknowledged?
   c. What aspects of attribution are missing (or not missing) from the object(s) or output(s)?

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Large group discussion questions

As a large group, answer the following questions:

1. Please share the roles they found in their scholarly objects.
2. How can we organize these roles into a hierarchy?
3. Are there any relationships between roles, or between roles and objects?
4. Please identify people who performed the roles, or consider people who were not mentioned that must have performed the roles.
5. In what ways would this kind of classification assist researchers?
6. Who else might it benefit and why?

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Wrap up: model to capture attribution
Large group discussion: capturing attribution

Questions:
1. In your area of work, what things are given credit, or aren’t given credit? What is your experience?
2. What are the things you think are important (to you/community) or should be present in how the ontology is created?
3. Are there small steps you can take, or that can be taken to move things forward?

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Thank you!