Authorship, Reviewing, and Ethics (and more writing)

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Discussion led by Sandra Penny and Caroline Pew

Authorship

Authors should be people who did work on a paper, and not other people. But scientists quibble over author inclusion and order, because citation indices are used to quantify research quality for promotion and tenure.

The questions that came up in class were: Who should be an author? What does author order mean? Can and should authors' contributions be made explicit? Should and can author contributions be quantified?

Until the 1920s, single-author papers were typical. Data from OECD (2007) show that since 1981, the fraction of papers authored by one person has increased while the fraction with at least 6 authors has increased. Brown (1994) discusses the problem of hitch-hikers or "honorary" authors, which is when one author did not contribute to the content of the paper. One way to bring honorary authorship to light and (we hope) discourage it is to enumerate the contribution of each author to a paper. One way to do this is with a narrative, as *Nature* now requires (see Authorship policies, 2009). Another way is to quantify it. The Quantitative Uniform Authorship Declaration (QUAD) does this (Verhagen et al. 2003), with percentages from each author for (1) conception and design, (2) data and collection, (3) data analysis and conclusions, and (4) manuscript preparation.

The order authors are listed differs among fields (e.g., Stubbs 1997). In some, authors are listed alphabetically. Often, author order has meaning (e.g., Lawrence 2002). In geosciences, the first author is typically the main author. In some fields, the last author is the most influential author; in others, it is the author who contributed the least.

Reading list

- Greene, M. (2007). The demise of the lone author. *Nature, 450*(7173), 11651166.
- OECD, O. (2007). Science, Technology and Industry: Scoreboard 2007. OECD Publishing.
- Brown, R. (1994). No hitch-hikers. *Nature, 369*(6482), 601.
- Byline Authors. ICMJE: Authorship and Contributorship. Retrieved December 13, 2009, from http://www.icmje.org/ethical_1author.html
- Games people play with authors' names. (1997). *Nature, 387*(6636), 831.
- Stubbs, C. (1997). The serious business of listing authors. *Nature, 388*(6640), 320.

- Thoughts on (dis)credits. (2002). *Nature, 415*(6874), 819. doi: 10.1038/415819a
- Lawrence, P. A. (2002). Rank injustice. *Nature, 415*(6874), 835-836. doi: 10.1038/415835a
- Pearson, H. (2006). Credit where credit's due. *Nature, 440*(7084), 591-592. doi: 10.1038/440591a
- Policy on papers' contributors. (1999). *Nature, 399*(6735), 393. doi: 10.1038/20743
- Authorship policies. (2009). *Nature, 458*(7242), 1078. doi: 10.1038/4581078a
- Verhagen, J. V., Wallace, K. J., Collins, S. C., & Scott, T. R. (2003). QUAD system offers fair shares to all authors. *Nature, 426*(6967), 602. doi: 10.1038/426602a
- Cham, J. (n.d.). The Author List: Giving Credit Where Credit is Due. *Piled Higher and Deeper*. Retrieved December 13, 2009, from http://www.phdcomics.com/comics/archive_print.php?comicid=562

Reviewing

Peer-review is a special responsibility that scientists have. The peer-review process is how the scientific community enforces quality and reproducability in the literature, which is the record of scientific advancement (Maddox 1995 discusses the importance of scientific literature).

There are written and unwritten rules of peer review. Reviewers should maintain confidentiality of papers, but they don't always. Should reviews be signed? Should they be double blind? Bias, in particular sexism, is one reason to maintain blind peer review. Wenneras and Wold (1997) analyzed applications of Swedish postdocs and found compelling evidence that nepotism and sexism substantially affect applicant scores. There is evidence that suggesting reviewers for your papers can improve the chances of your paper being accepted, and it is helpful for your editor. Excluding reviewers is also possible, and there are cases where it can prevent conflict.

Reading list

- Maddox, J. (1984). Privacy and the peer-review system. *Nature, 312*(5994), 497-497. doi: 10.1038/312497a0
- Wenneras, C., & Wold, A. (1997). Nepotism and sexism in peer-review. *Nature, 387*, 341343.
- Dalton, R. (2001). Peers under pressure. *Nature, 413*(6852), 102-104. doi: 10.1038/35093252
- Lawrence, P. A. (2003). The politics of publication. *Nature, 422*(6929), 259-261. doi: 10.1038/422259a
- Grimm, D. (2005). PEER REVIEW: Suggesting or Excluding Reviewers Can Help Get Your Paper Published. *Science, 309*(5743), 1974. doi: 10.1126/science.309.5743.1974
- Working double-blind. (2008). *Nature, 451*(7179), 605-606. doi: 10.1038/451605b

Ethics

Science has an ethical code that must be followed to keep the body of scientific work moving forward. Some examples of scientifically unethical behaviors listed in Martinson et al. (2005) are: falsifying data, engaging in questionable relationships, borrowing ideas without giving credit, failing to present data that contradict one's own previous research, overlooking others' use of flawed data or questionable interpretation, and changing the parts of a study in response to pressure from funding sources.

Ethics might be getting worse (Maddox 1995). One conjecture is that this is due to increased competition in some fields. While some unethical behaviors are clearly wrong, are punished when they are known, and rarely occur, unethical behavior more generally is widespread.

The class held an ancillary discussion about the problem of non-citation. The purpose of writing a paper is to be cited (Untersteiner 1995). Science is a communal activity. Work should be undertaken to address problems of interest to the community, and the community in turn should cite relevant publications and then build on their ideas. In some fields, such as the arts and humanities, almost no papers are cited. Citation rates vary widely in different literatures and even between sub-fields. But lists of publications and citation indices are inadequate measures of the quality of a scientist's work (Untersteiner 1995).

Reading list

- Maddox, J. (1995). Restoring good manners in research. *Nature*, *376*, 113.
- Martinson, B. C., Anderson, M. S., & de Vries, R. (2005). Scientists behaving badly. *Nature*, *435*(7043), 737-738. doi: 10.1038/435737a
- Untersteiner, N. (1995). Cite This Letter! *Physics Today, 48*(4), 15. doi: 10.1063/1.2807969

Supplementary material: slides we didn't get to discuss

We didn't get to the two chapters that were assigned reading in the discussion, but the content from slides prepared by Catherine and Sandra is below.

Actually sitting down to write

Alley, M. (1996). Chapter 17: Actually Sitting Down to Write. In *The craft of scientific writing* (pp. 228-254). Springer Verlag.

Before you start:

- Have something to write about — a "destination"
- Understand your constraints — audience and format

Getting in the mood to write

- Clear your mind: sleep, motion (walk run exercise), daydream
- Block out time for writing
- Eliminate distractions (phone, email, etc.)
- Prepare yourself mentally

First draft

- Don't plan to finish in one sitting
- How do you get words on paper?
  - Write a strong outline
  - Are you a turtle or a rabbit?
  - A suggested writing order: rough intro, well thought-out discussion, then rewrite intro after draft is finished
  - Sustain momentum by: setting realistic goals, end a sitting by starting the next section, eat healthy, store the draft under a different filename from the work in progress.
  - Writer's block: Can't find the right word or right sentence? Leave it blank.

Revising

- Pay attention to elements of style here, not before
- Make many revisions
- Take a day between drafting and revision
- Change the look of the document (font, print out, etc.)

- Revise large chunks in one sitting
- Read aloud
- Solicit criticism
- Enough is enough — find a stopping point

Writing a proposal

Chapin, P. G. (2004). Chapter 5: Writing a Proposal. In *Research projects and research proposals: a guide for scientists seeking funding* (pp. 61-97). Cambridge University Press.

Writing a proposal: Project description

- Clear narrative
- Conceptual foundation
- Literature survey
- Results of previous research (if applicable)
- Project design
- Significance/broader impacts
- Dissemination of results
- Investigator qualifications

What the audience wants

- Audience 1: Ad hoc reviewers
  - Survey of background literature
  - Project design: logical rationale, Selection of subject/materials, Data gathering and analytical methods, interpretations
  - Planned dissemination method
  - Qualifications to undertake project
  - Results of prior research
- Audience 2: Advisory panel
  - Less specific knowledge than ad hoc reviewers
  - Clarity of conceptual foundations
  - Significance of proposed project
  - Broader impacts, social good

- Audience 3: Program officer (Applications that have an advantage)
  - Renewal of support
  - Underrepresented research topics/areas
  - New PIs to encourage new talent and ideas
  - Primarily Undergraduate Institutions
  - PI belongs to underrepresented group
  - Proposal is from a state that receives less federal science funding
- Audience 4: special panel
  - Have more specialized knowledge than advisory panel
  - Hybrid of advisory panel and ad hoc reviewers

To *Science* or *Nature*, or not to? (Quotes from Lawrence, *Nature* 2003, in Reviewing reading)

- "If we publish in a top journal we have arrived, if we don't we haven't"
- "Although there are good reasons for publishing papers where they are more likely to be read, when we give the jounal priority over the science we turn ourselves into philistines in our own world"
- Disagreements with reviewers are better suited to long format because over-simplification can hurt the science.