# Research Methodology: Lecture 8

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# Scientific Norms and Conventions



# Issues

- Authorship.
- Plagiarism.
- Simultaneous submissions.
- Reviewing norms.
- Referring to other papers.
- Use of data.



# Academic Authorship

- Communicate scholarly work, establish priority for their discoveries, and build peer-reputation.
  - Also accept the responsibility for the contents of the work.
- Primary basis of evaluation for employment, promotion, and other honours.
- At a broad level, authorship is linked to intellectual contribution.
  - Experimental design.
  - Analysis of the data.
  - Suggesting the idea.
  - Obtaining funding.
    - Not an intellectual contribution, is it?
  - Drawing the line may become difficult.

`http://en.wikipedia.org/wiki/Academic_authorship`



# What Constitutes Authorship?

- Subject specific:
  - Natural Sciences, Mathematics, Engineering, Medicine, Social Sciences.
  - No universal convention.
  - Some journals insist on written declaration of contributions of different authors.
- “Authorship implies non-trivial technical contribution.”
  - Generally true in mathematical sciences.
  - Not necessarily true in engineering, e.g., authorship could only imply that a person is the “official” supervisor of another author.
- Ghost author.
  - A person who actually made significant contribution, but is not listed among the authors.



# Order of Author Names

- Hardy-Littlewood principle.
  - According to the alphabetical order of the last names of the authors.
  - Generally true for mathematical sciences.
  - Violated only when one author has made substantially more (or substantially less) contribution than the other authors.
- Other conventions.
  - Ordering based on contributions with most active contributors listed first.
  - Biologists tend to place a supervisor or lab head last in an author list.
  - Organic chemists might put him or her first.



# Responsibilities of the Authors

- Customary that all co-authors should be able to understand and support the major points of the paper.
- All authors are usually expected to have made reasonable attempts to check findings submitted for publication.
  - Share both the glory and the ignominy.
- Some papers may explicitly mention “who did what.”
- Some journals (in medicine) require authors to disclose possible commercial conflict of interests.



# Plagiarism

- Copying (in a broad sense) content from another paper and claiming that to be one's own original content.
  - Content may mean results, techniques or ideas.
  - It also includes language, diagrams/figures, tables.
  - Copying from more than one paper is also plagiarism.
    - Example: writing an introduction by copying sentences from several papers.
- Sometimes plagiarism can occur unintentionally.
  - Examples: (a) Using particularly expressive language from another paper without quotations and citation.
    (b) Using summary tables from other papers without citation.
    (c) Mentioning basic results without citation just because it is simple.
  - But, this may not be distinguished from intentional plagiarism.
  - So, one has to be careful.



# Plagiarism (Contd.)

- Sometimes plagiarism can be subtle.
  - Mention the other paper in the list of references, but, not cite it at the appropriate place, for example, when a result or an idea from that paper is used.
- Plagiarism is usually considered a very serious academic offence.
  - Based on the principle of collective responsibility, all authors are responsible.
  - If the administration is strong, then punishment can be stringent.
  - If the administration is weak, then senior authors may get away by placing the blame on the junior authors.



# Simultaneous Submissions

- Double submission.
  - Submit a paper to two forums simultaneously.
  - The motivation is to increase publication possibility and possibly decrease time to publication by utilising parallelism.
- No decent journal will allow this.
  - Journals want to publish original papers, i.e., papers which have not appeared elsewhere.
  - Publishers obtain copyright from the authors.
- Simultaneous submissions to a journal and a conference.
  - Usually not allowed if the conference has official proceedings.
  - One should check both with the journal and the conference.
- Simultaneous submissions to two conferences.
  - Usually not allowed: conferences want original talks.



# Reviewing Norms

- One should not use results of a paper under review in one's own work.
- Confidentiality of the review process should be maintained.
  - But, it may be acceptable to discuss a paper under review with a colleague.
- A reviewer should not write a review based on reports of other reviewers.
  - Affects the independence of the opinions.
- Disclosure of information during discussion of a paper in the review process.
  - To make a point, one may have to disclose one's original thoughts.
  - Others should respect this reviewer's claim to ideas.



# Referring to Other Papers

- Broad categories for references.
  - Papers which start an area or a topic.
  - Papers on which the current paper builds on in terms of techniques.
  - Previously published papers which are improved upon.
  - Independent work by other authors having same or similar results.
  - Papers not directly relevant but related to the current work.
- Provide proper credit and perform fair comparisons.
- Criticism of other papers.
  - Technical criticisms must be well substantiated.
  - Avoid personal criticisms.
  - Proper criticism is healthy.



# Use of Data

- Provide proper reference to the source of the data.
- Ascertain ownership of data.
  - For large data-sets this can be a complicated issue.
  - Issues of funding are involved.
- Obtain necessary permission for using data from a particular source.



# Use of Data (Contd.)

- Attempts should be made to use comprehensive data.
  - Running an experiment on small data is not convincing.
  - Attempts should be made to convince the reader that the data is representative.
- Basic integrity.
  - Data should not be faked.
  - Results should not be changed.
  - Both positive and negative results should be mentioned.
  - Experiments should be repeatable, i.e., running the same program on the same data should produce the same or similar results.



# Use of Software and Online Material

- Provide proper reference.
- If the software is free, then the reference is possibly the only pay-off.
- There are online treasure houses such as the online encyclopedia of sequences.
  - Provide proper reference.
- For referring to online material, it is a good idea to mention the date of access.
  - The material may vanish at a later date.



# Collaborative Work



# Issues

- What is collaboration?
- With whom to collaborate?
- When to collaborate?
- How to collaborate?



# What is Collaboration?

- Jointly participating in a project and contributing to its possible completion.
- Nature of collaboration and types of contributions.
  - Suggestions for the basic idea.
  - Working out details.
  - Doing relevant background research.
  - Doing experimental work.
  - Preparation of the paper.
- Timing of collaboration.
  - The project may start with the group.
  - The group may grow as the project develops.



# With Whom to Collaborate?

- Famous people.
  - Will make you famous!
- With appropriate people.
  - Provides an opportunity to learn.
  - Builds a long-term and healthy collaborative research framework.
- Non-performers.
  - Some persons may cease to become useful to a project.
  - Complete the work as soon as possible and move on.
  - The person is not necessarily bad, it may be that the project was not suitable.



# When to Collaborate?

- Interdisciplinary research.
  - The skills of the different persons will complement each other.
  - Avoids the requirement of one person having to read up everything to proceed.
- To overcome deadlock.
  - The project may be stuck and somebody may help it move forward.
- Cons of collaboration.
  - Overcoming problems through repeated efforts is the way to learn.
  - Various skills related to research are only acquired through trial-and-error and practice.
  - Instead of looking for solutions one may begin to look for people who will provide the solutions.
  - Too much collaboration will make you a scientific manager rather than a scientist.



# How to Collaborate?

- Discuss openly.
  - Do not hold back ideas for later “single author” work.
- Make a positive contribution.
  - In terms of ideas and also in terms of working out details.
  - Keep the project moving.
    - If progress stops for a “long” time, then the project may die.
  - Every collaboration is also a “friendly” competition.
    - Enjoy the healthy competition.
    - Use the competition to focus and improve.
- Distributed collaboration.
  - Projects may be initiated, developed and completed over email.
  - Use a single document and ensure consistency of editing.

