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Ethics and etiquette of publication: some dos and don'ts researchers should be aware of

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Why ?

- Science is matter of **trust**:
 - Trust obligations towards colleagues
 - Trust obligations towards society
 - Trust obligations towards yourself
- Failing to honor trust obligations may have a significant negative impact on Science, Society, Colleagues, your own career ...
- Discussion, review and emphasis are worthwhile



What?

- **Ethics**

basic conduct rules integral to progress in science, inherent to science itself

- **Etiquette**

Established practices often govern social behavior in cultures and communities

Same holds for science. Different practices are applied by different communities



To whom ?

- Obviously this talk targets
 - Graduate students
 - Young researchers
- However
 - Senior researchers have a big and crucial role, it is good to remind
 - You will all become senior ...
- Focus on scientific and technological disciplines



Credits

- This presentation is inspired by a similar presentation by G. Sharma and S. Hemami: *Publication Etiquette and Ethics*

https://www.ieee.org/publications_standards/publications/authors/publication_etiquette.pdf

- Most examples and case-studies are taken from:

On being a scientist: a guide to responsible conduct in research. National Academies Press (US), 2009.



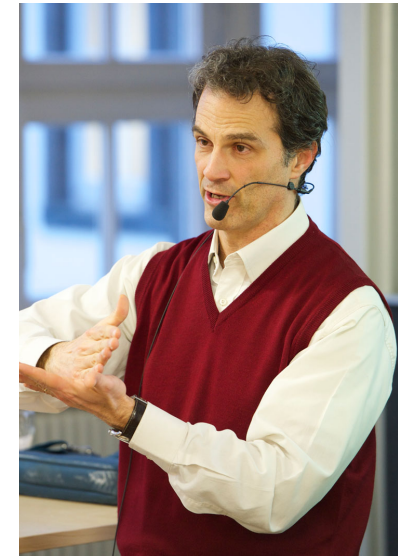
Outline

- Ethics vs etiquette
- Focus on 4 aspects
 - Scientific integrity
 - Plagiarism
 - Authorship
 - Publication metrics
- Final remarks



About me

- Working at the University of Siena since 1998
- Author of more than 80 Journal paper, 300 papers overall
- EiC, IEEE Transactions Inform. Forensics and Security ('15-'17)
- Funding EiC Eurasip Journal on Information Security
- AE of > 10 journals, TP several conferences, member and chair of IEEE technical committees, SPS conference board





Ethics and etiquette



Why does one publish?

- Share discoveries and knowledge
- Other benefits
 - Writing promotes better understanding
 - Logical organization requires clarity of thought
 - Often spurs new ideas by authors and others



Why does one publish? **Collateral** effects

- Gain prestige and recognition
- Required for program/degree
- Assessment of some careers based on publications

Reviewers, readers, editors ... don't (shouldn't) care about collateral effects



Etichs

- Ethics regard the set of values **universally** recognized by scientists
- **Scientific integrity**
 - Carry out your research to advance yours and others' knowledge
 - Write papers to share what you learned
- **Value the time of others**
 - Editors
 - Reviewers
 - Readers
 - YOU



Etiquette

- Grey areas call for the adoption of best practices and community behaviors which vary a lot one discipline to the other
- Examples:
 - Self-plagiarism, conference vs article papers
 - Least publishable result
 - Authorship, authors' order
 - Citations
 - Blind, semi-blind, double blind reviews
 - ...



Scientific integrity



Scientific integrity

- Your manuscript should reflect what you actually did, proposed, observed, learned
 - Heuristics/hacks should also be documented
 - Do not fabricate results or data
 - Selectively reporting results is deceitful
 - Results should be reproducible



Scientific integrity

- Fraud is eventually uncovered
 - After damage is made
 - Several high profile cases



MMR vaccine and autism: Wakefeld case

- 1998: Paper published: Wakefield AJ, Murch SH, Anthony A, Linnell J, Casson DM, Malik M, et al. Ileal-lymphoid-nodular hyperplasia, non-specific colitis, and pervasive developmental disorder in children. *Lancet*. 1998.
- 1999: Subsequent studies raised lack of scientific rigor
- 2004: 10 authors retracted (lacks of statistical evidence), *Lancet* reveals that Wakefeld did not notify conflict of interest
- 2010: paper completely retracted by *Lancet*: scientific misinterpretation, ethical violation (lack of ethical clearance)
- 2011: Recognition of deliberate fraud, Wakefeld radiated by medical order



Schön's scandal

- Starting from 1998, Schön et al published a series of papers reporting findings regarding on-off switching and super-conductivity behavior of organic material
- Schön received two important prizes for his discoveries (2001, 2002)
- Suspects raised since none was able to reproduce experiments, figures in various papers were suspiciously similar and results looked too smooth.
- A commission at Bell's lab examined results, Schön failed to give satisfactory explanations
- Schön was found guilty of data fabrication, fired from Bell's lab, several papers withdrawn, PhD revoked



Case study 1: selection of data

Deborah, a third-year graduate student, and Kamala, a postdoctoral fellow, have made a series of measurements on a new experimental semiconductor material using an expensive neutron test at a national laboratory. When they return to their own laboratory and examine the data, a newly proposed mathematical explanation of the semiconductor's behaviour predicts results indicated by a curve.

During the measurements at the national laboratory, Deborah and Kamala observed electrical power fluctuations that they could not control or predict were affecting their detector. They suspect the fluctuations affected some of their measurements, but they don't know which ones.

When Deborah and Kamala begin to write up their results to present at a lab meeting, which they know will be the first step in preparing a publication, Kamala suggests dropping two anomalous data points near the horizontal axis from the graph they are preparing. She says that due to their deviation from the theoretical curve, the low data points were obviously caused by the power fluctuations. Furthermore, the deviations were outside the expected error bars calculated for the remaining data points.

Deborah is concerned that dropping the two points could be seen as manipulating the data. She and Kamala could not be sure that any of their data points, if any, were affected by the power fluctuations. They also did not know if the theoretical prediction was valid. She wants to do a separate analysis that includes the points and discuss the issue in the lab meeting. But Kamala says that if they include the data points in their talk, others will think the issue important enough to discuss in a draft paper, which will make it harder to get the paper published. Instead, she and Deborah should use their professional judgment to drop the points now.



Case study 1: selection of data

- What should Deborah and Kemala do?
- What factors should be taken into account in making a decision?
- Should the new theoretical model be taken into account to make a decision?
- Should a preliminary paper be prepared?
- If an agreement is not found between the authors, should one resign from authoring the paper?



Case study 2: discovering an error

Two young faculty members - Marie, an epidemiologist in the medical school, and Yuan, a statistician in the mathematics department - have published two well-received papers about the spread of infections in populations. As Yuan is working on the simulation he has created to model infections, he realizes that a coding error has led to incorrect results that were published in the two papers. He sees, with great relief, that correcting the error does not change the average time it takes for an infection to spread. But the correct model exhibits greater uncertainty in its results, making predictions about the spread of an infection less definite.

When he discusses the problem with Marie, she argues against sending corrections to the journals where the two earlier articles were published. *“Both papers will be seen as suspect if we do that, and the changes don’t affect the main conclusions in the papers anyway,”* she says. Their next paper will contain results based on the corrected model, and Yuan can post the corrected model on his Web page.



Case study 2: discovering an error

- What obligations do the authors have ?
- Should they submit a formal correction note to the journal?
- What else could they do?



Plagiarism



Plagiarism

- Plagiarism: use of another person's words or ideas without appropriate attribution
 - Always attribute sources – even informal ones (oral/email communication, website, ...)
 - When quoting use no more than one/two sentences verbatim from other authors' paper
 - No exceptions
 - If required, rephrase and describe in your own words



Case study 3: is it plagiarism?

Professor Lee is writing a proposal for a research grant, and the deadline for the proposal submission is two days from now. To complete the background section of the proposal, Lee copies a few isolated sentences of a journal paper written by another author. The copied sentences consist of brief, factual, one-sentence summaries of earlier articles closely related to the proposal, descriptions of basic concepts from textbooks, and definitions of standard mathematical notations. None of these ideas is due to the other author. Lee adds a one-sentence summary of the journal paper and cites it.



Case study 3: is it plagiarism?

- Should the copying of a few sentences like in this case be considered plagiarism ?
- Is citing the journal paper enough to give proper credit to the author of the other article?



Self-plagiarism - double submissions

- It is not acceptable to submit substantially the same manuscript for review in multiple journals at the same time
 - Terribly wasteful of editorial board and reviewer resources
 - The practice is completely taboo in the world of scientific publishing
 - Copyright issues



Re-use of own material

- Judging partial re-use cases is more difficult:
 - Suggestion to at least rewording the content
- Extension of conference works to journal paper
 - Often a matter of etiquette, IEEE rule
 - Helpful to base decision on main principle



Case study 4: publication practices

Andrea, a young assistant professor, and two graduate students have been working on a series of experiments for the past several years. Now it is time to write up the experiments for publication, but the students and Andrea must first make an important decision. They could write a single paper with one first author that would describe the experiments in a comprehensive way, or they could write two shorter, less-complete papers so that each student could be a first author.

Andrea favours the first option, arguing that a single publication in a more visible journal would better suit all of their purposes. This alternative also would help Andrea, who faces a tenure decision in two years. Andrea's students, on the other hand, strongly suggest that two papers be prepared. They argue that one paper encompassing all the results would be too long and complex. They also say that a single paper might damage their career opportunities because they would not be able to point to a paper on which they were first authors.



A related issue: least publishable research

- Case study 4: publication practices
- What should Andre and his students do?
- How can etiquette help in this case?
- If a single paper is published, how can they make clear to a review committee their roles in the paper?



Authorship



Authorship and ack

- Authorship should be limited to individuals who have
 - **substantively contributed to the work**
 - reviewed the manuscript and agree with the contents and are willing to be listed as co-authors
- “Honorary”, “guest” or “gift” authorship, sometimes common, is a bad practice
- “Ghost” authorship is also to be condemned
- People who have offered advice, tools, etc but not directly participated can be acknowledged
 - Let them know you are acknowledging them
- All authors share responsibility for any ethics violations!
 - Do they ?



Multiple authors

- Authors order: it is matter of etiquette
 - Group-wise
 - Community-wise
 - Examples
- Discuss practices as early as possible in the course of research
- Contact author
 - Link between authors and editorial staff
 - In charge of gathering permissions and opinions of all authors and inform them



Who gets credit? An example

- Pulsars discovered in 1967
- Jocelyn Bell was working in a project under the supervision of Anthony Hewish
- While operating a telescope Bell noticed a “bit of scurf” on the radio chart
- Analyzed the periodic signal with Hewish, found similar signatures everywhere and published a paper discovering pulsars (with others)
- Hewish (only) won Nobel prize for the discovery
 - Bell says she did not deserve the Nobel for doing what a student is supposed to do on a project conceived and set up by others
 - ???



Who gets credit? Case study 5

Robert has been working in a large engineering company for three years following his postdoctoral fellowship. Using computer simulations, he has developed a method to constrain the turbulent mixing that occurs near the walls of a tokamak fusion reactor. He has written a paper for Physical Review and has submitted it to the head of his research group for review. The head of the group says that the paper is fine but that, as the supervisor of the research, he needs to be included as an author of the paper. Yet Robert knows that his supervisor did not make any direct intellectual contribution to the paper.



Who gets credit? Case study 5

- What should Robert answer to the request of including his supervisor as honorary author?
- How could he appeal to the decision?
- What resources exist that Robert could use to deal with this issue?



Publication metrics



Publication metrics

- Everything started with the IF:
 - Help librarians determine which journals are being used and to aid them with subscription decisions
 - Aggregate measure of all citations to
 - All articles published in the journal in the last 2 years.
 - It is an average measure
 - Does not provide information on citations of a single paper
 - High impact factor does not mean high selectivity
 - Correlation between IF and rejection ratio is less than 0.2
 - Don't use IF as proxy for the quality of a single paper
 - Don't use IF to select in which journal to publish



Publication metrics

- Number of citations of single papers is useful but its utility in assessing the importance and significance of work is limited

Improving your own metrics is NOT the goal of your research and the goal of a publication

My view: researchers should not care about the way the quality of their research is judged, this is the problem of employment officials. Learn how to be a good researcher, the rest will come.



Bibliometric manipulation

- "Bibliometric manipulation" is defined as actions designed to influence either journal bibliometric measures or personal citation counts
- Many scientific societies now consider "bibliometric manipulation" as misconduct
- Cite your own (and others) papers when they are relevant, not to increase your own citation counts
- When you review papers, make sure you review the bibliography for the same reasons!



Final remarks



Part of a community

- Maintaining an ethical behavior is a community effort, be ready to do your part
 - Understand and apply ethics and etiquette rules relevant to your community and position
- Volunteer for reviews
 - Ask your supervisor to help you, then move to independent reviews
- More responsible roles: TP members, TP chair, AE, EIC
- Be ethical and respect etiquette
 - Resist inappropriate peer pressure
 - Unethical behaviours reflects poorly not only on you but also: co-authors, institution, community, country ...



Final remarks

- Dynamics of publishing are constantly evolving
- Traditionally, researchers were relatively small community
 - Ethics and etiquette practices were passed on from advisor to student through personal contact
- Distributed work and collaboration environments enable joint work without personal contact
 - Increase productivity
 - Raises new problems and challenges
 - Do not eliminate the need for understanding acceptable etiquette



Further readings

- IEEE Author Rights and Responsibilities
 - http://www.ieee.org/publications_standards/publications/rights/authorrightsresponsibilities.html
 - <http://tinyurl.com/o7ene37>
- SPIE Code of Ethics (See section “Guidelines for Ethical Publishing”)
 - <http://spie.org/Documents/ConferencesExhibitions/SPIE-Code-of-Ethics.pdf>
 - <http://tinyurl.com/p6tf6du>



Further readings

- Vancouver Protocol
 - http://www.research.mq.edu.au/about/research_@_m_acquarie/policies,_procedures_and_conduct/documents/Vancouver.pdf
 - <http://tinyurl.com/ppqu9ub>
- On Being a Scientist (US National Academies)
 - <http://tinyurl.com/mw9ggel>



**Thank you
for your attention**
