Research Ethics Workshop
Session 2: background and context

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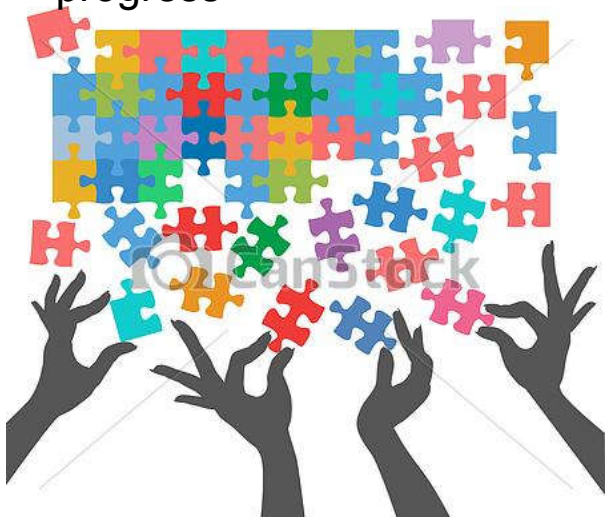
How does science make progress?

Michael Polanyi's jigsaw metaphor in "The Republic of Science", Minerva, 1962.

Everyone has only a few pieces of puzzle

Everyone has a duplicate copy of puzzle, but works alone

Everyone is cooperating on the same large puzzle – cumulative, collective, progress



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Norms of Science

- Norms ("implicit rules of conduct") allow science to progress
- Merton ("The Normative Structure of Science", 1973) discusses four categories:
  - universalism (non-discrimination)
  - communism (common ownership of knowledge)
  - disinterestedness (everyone is equally accountable)
  - organized skepticism (temporary suspension of judgement).

How do norms emerge?

- Norms of science are not always followed
- But they are generally accepted as necessary for science to function
- The development of norms is usually described by the beneficial outcomes they have
- Norms evolve when people in groups repeatedly interact and can observe each other's behaviour.
- Mechanism involved in evolution of norms: community, reputation, punishment, metanorms, dominant groups (e.g. Royal Society), internalization. (See Axelrod, An evolutionary approach to norms, 1986).

Norms and scientific practice

- Disinterestedness norm: science is supposed to be objective and impersonal. There is no justification for misconduct.
  - Fabrication: making results up
  - Falsification: manipulating data to create a false record
  - Polanyi's jigsaw puzzle metaphor: fabrication and falsification mislead others assembling the jigsaw
- Science is built on trust

Norms and scientific practice

- Universalism norm: non-discrimination amongst scientists
  - The only thing that should matter is, “do two pieces of the puzzle fit together”?
- Plagiarism: “the appropriation of another person’s ideas, processes, results, or words without giving appropriate credit.” (US Office of Science and Technology Policy)
  - Avoiding plagiarism requires properly acknowledging the source of ideas in what we say and write.
  - Why is giving credit important?

Norms and Plagiarism
why credit is important

- Communism norm: scientific knowledge is shared
  - Scientists generally do not profit from their discoveries
  - In return they get acknowledgment and credit
  - Need to preserve incentives for scientists to place knowledge in the common pool
- Summary: scientists are expected to be disinterested, and share their findings, but in return scientists expect credit for their ideas and words
- Is it acceptable to plagiarise from an altruist?

Norms and Plagiarism

- No. Science is a conversation between scientists and involves trust of other parties in the accuracy of what you say
- “Contractualism” in ethics
  - Wrong actions are those that cannot be justified to others with different values
  - “everyone ought to follow principles whose universal acceptance everyone could rationally will” (Thomas Scanlon)
- Science is governed by an implicit form of contractualism
- How to cite is part of the contract of science
- Different ways of thinking about why plagiarism is always wrong: damaging the conversation, consequences of plagiarism on incentives for scientists, violates contract of science.
- Firm international consensus against plagiarism

Plagiarism and Ownership

- “In addition to the harm that plagiarism does to the pursuit of truth, it can also be an offense against the literary rights of the original author and the property rights of the copyright owner.” American Historical Association statement on plagiarism
- The scientific community takes ownership (and infringement thereof) of ideas very seriously

How do we avoid plagiarism?

- Giving credit for others' contributions
- Keeping the scientific conversation straight
- Correct and appropriate citation
  - accurate and relevant to your work
- Plagiarism does not apply only to published work
- What if you attend a conference and get ideas from viewing a poster, and then publish related work?

Consequences of Research Misconduct

- Diedrik Stapel, social psychologist in Netherlands, fabricated several studies:
  - lost his job, career ended, papers all retracted.
- Armando Córdova, chemist at Stockholm University, took ideas at conferences, passed off as his own, published hastily and sloppily:
  - received university censure, papers retracted.
  - “Córdova has a confused and incorrect concept of phase behaviour. This supports us in our conclusion that the eutectic model could not have been developed independently by him. It is clear that Professor Cordova behaved unethically.“ Investigating committee report.
  - According to his former post-doc advisor, “His reputation internationally is extremely poor”.

The legal situation

- Neuroscientist Milena Penkowa fabricated data in several papers and subsequently forged documents to hide the fabrications
  - sentenced to prison by a court in Denmark
- Research misconduct is usually handled privately
- Laws are more narrowly defined, for example, against forgery, copyright violation, etc.
- Ethics of research more broad, “As a practical matter, plagiarism between scholars rarely goes to court, in part because legal concepts, such as infringement of copyright, are narrower than ethical standards that guide professional conduct”, AHA Statement on Plagiarism

More on Copyright

- Not enough to put quotation marks around text
- Must also be aware of copyright policy
- Short quotes covered by “fair use”
- Longer quotations require permission
- Figures are covered by copyright, need permission to use (“Reprinted (or adapted) from... Copyright by...Reprinted (or adapted) with permission”)
- If in doubt, contact the publisher

Avoiding Questionable Research Practices

- Egregious plagiarism (serious misconduct) also occurs in India
- But questionable research practices more common, “Many articles came from authors who had a poor understanding of what they should or shouldn't do with citations,“ said [P] Balaram. "Things to be put in quotes weren't, and references were not put in the right places. There are a lot of gray areas where authors' intentions are not to violate any code of conduct." (Quoted by GlobalPost).

Questionable Research Practices can have serious consequences

Retraction Watch

Tracking retractions as a w

Biotech journal pulls well-cited review that plagiarized from several sources

with one comment

A biotechnology journal has retracted a 14-year-old review after an investigation concluded that the authors had plagiarized from numerous sources.

The last author of the paper — which has been cited 289 times, according to Thomson Reuters Web of Science — told us the authors took a few lines from other reviews, and unintentionally left off the references.

In June 2011, the same author was denied a prestigious fellowship after an anonymous plagiarism allegation was filed against him.

Here's the retraction notice in *Applied Microbiology and Biotechnology* for "The nitrile-degrading enzymes: current status and future prospects:"

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> The article has been retracted at the request of the Editor-in-Chief, as it contains portions of other authors' writings on the same topic in other publications, without sufficient attribution to these earlier works being given. The principal authors of the paper acknowledged that text from background sources was mistakenly used in this article without proper reference to the original source. Upon investigation carried out according to the Committee on Publication Ethics guidelines, it has been found that the authors have duplicated or rephrased parts from the following articles:

Guidelines (adapted from Roig, ORI)

- Acknowledge sources of ideas
- Enclose verbatim text in quotation marks
- Cite every source
- When summarizing others' ideas, condense
- When paraphrasing, cite
- Be accurate about meaning
- Use your own words

Guidelines (adapted from Roig, ORI), contd.

- When in doubt as to whether something is common knowledge, cite
- Avoid self-plagiarism
- Avoid copyright violation
- Practice correct citation
- Cite only what you read
- Avoid irrelevant referencing
- When borrowing heavily, make clear what is not yours

Role of Software

- Software (e.g. Turnitin) is being used by journals to detect plagiarism
- It is okay to use such tools as a writer
- However, there is much more to plagiarism that simply reproducing someone else's text
- Therefore it is important to be mindful while writing and citing

More from AHA

"But just as important as the self criticism that guards us from self deception is the formation of work habits that protect a scholar from plagiarism. The plagiarist's standard defense—that he or she was misled by hastily taken and imperfect notes—is plausible only in the context of a wider tolerance of shoddy work."

American Historical Association Statement on Plagiarism

Assignments

- What are the benefits of clarity about where source material comes from?
- Read American Historical Association's Statement on Plagiarism
- Read Prof. P Balaram's editorial on plagiarism, "Plagiarism: a spreading infection", Current Science, 2005
- Read Roig, M, "Avoiding plagiarism, self-plagiarism, and other questionable writing practices: A guide to ethical writing" (Office of Research Integrity)
- Practice writing and citing correctly