

An Introduction To Research Ethics

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ETHICS IN SCIENCE AND RESEARCH

- WHAT IS ETHICS? LAW? MORALITY?
- What Compromises Ethics?
- Problems in Research Ethics
- Case Study Committee on Publication Ethics (COPE)
- The Conventionally Accepted Basic Ethical Norms for Scientists
- Precautionary Principle
- CODES OF ETHICS
 - Association of Computer Machinery (ACM) Code of Conduct
 - The American Physical Society Guidelines for Professional Conduct
 - Ethical Guidelines of the American Mathematical Society
 - On Being A Scientist: Responsible Conduct In Research

ETHICS

- The discipline dealing with what is *good or bad* and with moral duty and obligation
- A set of moral principles or values put in place for the betterment of all.
- Conforming to professional standards of conduct

ETHICS - definition

- **Ethics** - Branch of philosophy concerned with the evaluation of human conduct.
- Philosophers commonly distinguish:
 - **descriptive ethics**, the factual study of the ethical standards or principles of a group or tradition;
 - **normative ethics**, the development of theories that systematically denominate right and wrong actions;
 - **applied ethics**, the use of these theories to form judgments regarding practical cases; and
 - **meta-ethics**, careful **analysis** of the meaning and justification of ethical claims
- Source: www.ethicsquality.com/philosophy.html

LAW

- A set of complex rules mandated by society to control behavior of individuals and organizations.
- Violation of these rules could lead to society action such as imprisonment or fine.
- “Thou shalt be executed if thou kills someone” vs. “thou shalt not kill”
- “Thou shalt pay thy taxes” or dues

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5

MORALITY

- Principles of *right and wrong behavior* and the difference between *good or evil*
- A system of ideas of right and wrong conduct: *religious morality; Christian morality.*
- Virtuous conduct.
- A rule or lesson in moral conduct.

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6

What Compromises Ethics?

1. Power
2. Greed
3. Fear
4. Not-in-my-back-yard (NIMBY)
5. Everybody is doing it
6. It does not hurt anybody
7.etc. etc.

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7

Problems in Research Ethics

1. Ethical Issues Involving Research Subjects
2. Ethical Issues Involving The Researcher
3. Ethical Issues Involved in Paper Submission
4. Ethical Issues Involving the Institutions

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8

Ethical Issues Involving The Researcher

- Conference paper from incomplete research
- Glossed research method
- Anticipated outcomes
- Citation and authorship
- More details required for method, outcomes
- An eerily familiar block of text
- Incomplete references

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9

Ethical Issues Involved in Paper Submission

- | | |
|-----------------------------|--|
| • Sponsorship | • Depiction of the Research's Significance |
| • Authorship | • Consideration of the Research's Implications |
| • 'School of' Maneuvers | • Economic Factors |
| • Depiction of Research | • 'Political Correctness' |
| • Method | • Submission Venues |
| • Plagiarism | |
| • References and Citations. | |

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10

Ethical Issues Involving the Institution

- Funding from an interested party
- Facilities, unpublished sources, conferences
- Constrained topic-choice
- Senior research review
- Withholding and/or 'vaguening up'
- Suppressed negative-aspect analysis

Centre for Research Ethics Göteborg University

- <http://www.cre.gu.se/links.html>
- <http://wwwhost.gu.se/cre/underv/etik.html>

Case Study Committee on Publication Ethics (COPE)

- Founded in 1997 as a response to growing anxiety about the integrity of authors submitting studies to medical journals.
- Founded by British medical editors-- including those of the BMJ, Gut, and Lancet.

COPE's five aims

- Advise on cases brought by editors
- Publish an annual report describing those cases. Three published (www.publicationethics.org.uk)
- Produce guidance on good practice
- Encourage research
- Offer teaching and training
- (Shame the British establishment into mounting a proper response)

COPE's first 103 cases

- In 80 cases there was evidence of misconduct.
- Several cases have been referred to employers and to regulatory bodies
- Problems were
 - undeclared redundant publication or submission (29),
 - disputes over authorship (18)
 - falsification (15)
 - failure to obtain informed consent (11)
 - performing unethical research (11)
 - failure to gain approval from an ethics committee (10)

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15

COPE - Conclusion

- Research misconduct is problem
- Most countries have not developed a coherent response to the problem
- They need to in order to avoid a collapse in public trust in medical research.

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16

The Conventionally Accepted Basic Ethical Norms for Scientists - CUDOS

- **R.K. Merton first suggested in 1942 that the behavior of scientists** could be exemplified by a coherent set of norms.
- "The Mertonian norms are not, of course, a precisely defined and standardized code...". (Ziman)
- "These norms are shared only among members of the scientific community and not by society at large." (Schmaus)
- These norms include: **communalism, universalism, disinterestedness, and organized skepticism.**

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17

The Conventionally Accepted Basic Ethical Norms for Scientists

- *Communalism* requires that scientific knowledge should be public knowledge; that the results of research should be published; that there should be freedom of exchange of scientific information between scientists everywhere, and that scientist should be responsible to the scientific community for the trustworthiness of their published work.

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18

The Conventionally Accepted Basic Ethical Norms for Scientists

- *Universalism requires that science be independent of race, color, or creed and that it should be essentially international*

The Conventionally Accepted Basic Ethical Norms for Scientists

- *Disinterestedness requires that the results of bona fide scientific research should not be manipulated to serve considerations such as personal profit, ideology, or expediency, in other words they should be honest and objective; it does not mean that research should not be competitive.*

The Conventionally Accepted Basic Ethical Norms for Scientists

- *Organized skepticism requires that statements should not be accepted on the word of authority, but that scientists should be free to question them and that the truth of any statement should finally rest on a comparison with observed fact.*"

Precautionary Principle

- "When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically. In this context *the proponent of an activity, rather than the public, should bear the burden of proof.* "

CODES OF ETHICS

1. ACM
2. APS
3. AMS

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23

Association of Computer Machinery (ACM) Code of Conduct (1)

- <http://onlineethics.org/codes/ACMcode.html>
- 1. **General Moral Imperatives**
 - 1.1 **Contribute to society and human well-being**
 - 1.2 **Avoid harm to others**
 - 1.3 **Be honest and trustworthy**
 - 1.4 **Be fair and take action not to discriminate**
 - 1.5 **Honor property rights including copyrights and patents**
 - 1.6 **Give proper credit for intellectual property**
 - 1.7 **Respect the privacy of others**
 - 1.8 **Honor Confidentiality**

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24

ACM Code of Conduct (2)

2. More Specific Professional Responsibilities

- 2.1 Strive to achieve the highest quality, effectiveness and dignity in both the process**
- 2.2 Acquire and maintain professional competence**
- 2.3 Know and respect existing laws pertaining to professional work**
- 2.4 Accept and provide appropriate professional review**

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25

ACM Code of Conduct (3)

- 2.5 Give comprehensive and thorough evaluations of computer systems and their impacts, including analysis of possible risks**
- 2.6 Honor contracts, agreements, and assigned responsibilities**
- 2.7 Improve public understanding of computing and its consequences**
- 2.8 Access computing and communication resources only when authorized to do so**

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ACM Code of Conduct (4)

3. Organizational Leadership Imperatives

3.1 Articulate social responsibilities of members of an organizational unit and encourage full acceptance of those responsibilities

3.2 Manage personnel and resources to design and build information systems that enhance the quality of working life

3.3 Acknowledge and support proper and authorized uses of an organization's computing and communications resources

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27

ACM Code of Conduct (5)

3.4 Ensure that users and those who will be affected by a system have their needs clearly articulated during the assessment and design of requirements. Later the system must be validated to meet requirements

3.5 Articulate and support policies that protect the dignity of users and others affected by a computing system

3.6 Create opportunities for members of the organization to learn the principles and limitations of computer systems

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28

ACM Code of Conduct (6)

4. Compliance with the Code

4.1 Uphold and promote the principles of this Code

4.2 Treat violations of this code as inconsistent with membership in the ACM

The American Physical Society Guidelines for Professional Conduct (1)

The Constitution of **The American Physical Society** **states that the objective of the Society** shall be the advancement and diffusion of the knowledge of physics. It is the purpose of this statement to advance that objective by presenting ethical guidelines for Society members.

The American Physical Society Guidelines for Professional Conduct (2)

Each physicist is a citizen of the community of science. Each shares responsibility for the welfare of this community.

Science is best advanced when there is mutual trust, based upon honest behavior, throughout the community.

Acts of deception, or any other acts that deliberately compromise the advancement of science, are therefore unacceptable.

Honesty must be regarded as the cornerstone of ethics in science.

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31

Research Results (3)

The results of research should be recorded and maintained in a form that allows analysis and review.

Research data should be immediately available to scientific collaborators.

Following publication, the data should be retained for a reasonable period in order to be available promptly and completely to responsible scientists

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32

Research Results (4)

Exceptions may be appropriate in certain circumstances in order to preserve privacy, to assure patent protection, or for similar reasons.

Fabrication of data or selective reporting of data with the intent to mislead or deceive is an egregious departure from the expected norms of scientific conduct, as is the theft of data or research results from others.

Publication and Authorship Practices (5)

Authorship should be limited to those who have made a significant contribution to the concept, design, execution and interpretation of the research study.

All those who have made significant contributions should be offered the opportunity to be listed as authors.

Other individuals who have contributed to the study should be acknowledged, but not be identified as authors.

Publication and Authorship Practices (6)

- The sources of financial support for the project should be disclosed.
- Plagiarism constitutes unethical scientific behavior and is never acceptable.
- Proper acknowledgement of the work of others used in a research project must always be given.
- Further, it is the obligation of each author to provide prompt retractions or correction of errors in published works.

Peer Review (7)

Peer review provides advice concerning research proposals, the publication of research results and career advancement of colleagues. It is an essential component of the scientific process.

Peer review can serve its intended function only if the members of the scientific community are prepared to provide thorough, fair and objective evaluations based on requisite expertise.

Although peer review can be difficult and time consuming, scientists have an obligation to participate in the process.

Peer Review (8)

- Privileged information or ideas that are obtained through peer review must be kept confidential and not be used for competitive gain.
- Reviewers should disclose conflicts of interest resulting from direct competitive, collaborative, or other relationships with any of the authors, and avoid cases in which such conflicts preclude an objective evaluation.

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37

Conflicts of Interest (9)

- There are many professional activities of physicists that have the potential for a conflict of interest. Any professional relationship or action that may result in a conflict of interest must be fully disclosed. When objectivity and effectiveness cannot be maintained, the activity should be avoided or discontinued.
- It should be recognized that honest error is an integral part of the scientific enterprise. It is not unethical to be wrong, provided that errors are promptly acknowledged and corrected when they are detected.

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38

Conflicts of Interest (10)

- Professional integrity in the formulation, conduct and reporting of physics activities reflects not only on the reputation of individual physicists and their organizations, but also on the image and credibility of the physics profession as perceived by scientific colleagues, government and the public.
- It is important that the tradition of ethical behavior be carefully maintained and transmitted with enthusiasm to future generations.
- Physicists have an individual and a collective responsibility to ensure that there is no compromise with these guidelines.

ETHICAL GUIDELINES OF THE AMERICAN MATHEMATICAL SOCIETY (1)

To assist in its chartered goal, ". . . the furtherance of the interests of mathematical scholarship and research... " and to help in the preservation of that atmosphere of mutual trust and ethical behavior required for science to prosper...

I. Mathematical Research and Its Presentation (2)

The public reputation for honesty and integrity of the mathematical community and of the Society is its collective treasure, and its publication record is its legacy.

I. Mathematical Research and Its Presentation (3)

The correct attribution of mathematical results is essential, both as it encourages creativity by benefiting the creator whose career may depend on the recognition of the work and as it informs the community of when, where, and sometimes how original ideas have entered into the chain of mathematical thought.

I. Mathematical Research and Its Presentation (4)

To that end mathematicians have certain responsibilities which include the following:

- to be knowledgeable;
- to be aware of related work;
- to be certain of the originality of their own work;
- to give proper credit even to unpublished sources because the knowledge that something is true or false is valuable, however it is obtained;
- to use no language that suppresses or improperly detracts from the work of others; and
- to correct in a timely way or withdraw work that is erroneous or previously published.

I. Mathematical Research and Its Presentation (5)

On appropriate occasion it may be desirable to offer or accept joint authorship when independent researchers find that they have produced identical results.

However, the authors listed for a paper must all have made a significant contribution to its content, and all who have made such a contribution must be offered the opportunity to be listed as an author.

I. Mathematical Research and Its Presentation (6)

- A claim of independence may not be based on ignorance of well-disseminated results' and it must be convincing.
- A mathematician may not claim a result in advance of its achievement, for that injures the community by restraining those working toward the same goal.
- Publication of results that are announced must not be unreasonably delayed.

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45

I. Mathematical Research and Its Presentation (7)

- Because the free exchange of ideas necessary to promote research is possible only when every individual's contribution is properly recognized, the Society will not knowingly publish anything that violates this principle, and it will seek to expose violations anywhere in the mathematical community

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46

II. Social Responsibility of Mathematicians (8)

- The Society promotes mathematical research together with its unrestricted dissemination and to that end encourages all and will strive to afford equal opportunity to all to engage in this endeavor.
- Mathematical ability must be respected wherever it is found, without regard to race, gender, ethnicity, sexual orientation, or religious or political belief

II. Social Responsibility of Mathematicians (10)

- Any relevant relationship between a person asked for a report and someone named in it, whether or not it involves funding, should be explicitly revealed.
- Freedom to publish must sometimes yield to security concerns, but mathematicians should resist excessive secrecy demands, whether by government or private institutions

II. Social Responsibility of Mathematicians (11)

- In those instances where mathematics impacts on the "real world" it is the duty of mathematicians to disclose to their employers and to the public if necessary, the implications of their work, particularly when the impact may be on the public health, safety, or general welfare.
- This includes disclosing knowledge of false or overblown claims.

II. Social Responsibility of Mathematicians (12)

- It is the duty of individual mathematicians to reveal unethical professional acts or practices of which they may have knowledge.
- When this may bring retaliation, the Society is obligated to help protect the "whistleblower", particularly when the complaint has been made to the Society

III. Education and Granting of Degrees (13)

- Holding a Ph.D. degree is virtually indispensable to an academic career in mathematics and is becoming increasingly important as a certificate of competence in the wider job market.
- An institution granting a degree in mathematics is certifying that competence and must take full responsibility for it by insuring the high level and originality of the thesis work and sufficient knowledge by the recipient of important branches of mathematics outside the scope of the thesis.

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51

III. Education and Granting of Degrees (14)

- A thesis must adhere to the same rules as a publication and should be publishable in a recognized journal.
- When despite diligent search by the candidate and without the candidate's knowledge or fault, the work is found to have been anticipated in the literature, the degree should be Granted.
- But when there is evidence of plagiarism, it must be carefully investigated, even if it comes to light after granting the degree, and, if proven, the degree should be revoked.

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52

IV. Publications (15)

- The Society will not publish, print, promote, or aid in the publishing, printing, or promoting of any research journal where there is some criterion for acceptance of a paper other than its content.
- It will promote the quick refereeing and timely publication of articles accepted to its journals.
- Editors are responsible for the timely refereeing of articles and must judge articles by the state of knowledge at the time of submission.

IV. Publications (16)

- At the time a manuscript is submitted editors should notify authors whenever a large backlog of accepted papers may produce inordinate delay in publication; notice of these backlogs should also be published openly.
- A journal may not delay publication of a paper for reasons of an editor's self-interest or of any interest other than the author's.

IV. Publications (17)

- Editors must be given and accept full scientific responsibility for their journals; when a demand is made by an outside agency for prior review or censorship of so-called "sensitive" articles, that demand must be resisted, and, in any event, knowledge of the demand must be made public.

IV. Publications (18)

- All mathematical publishers particularly those who draw without charge on the resources of the mathematical community through the use of unpaid editors and referees, must recognize that they have made a compact with the community to disseminate information, and that compact must be weighed in their business decisions.

IV. Publications (19)

- Both editors and referees must respect the confidentiality of materials submitted to them unless these have previously been made public and above all may not appropriate to themselves ideas in work submitted to them or do anything that would impair the rights of authors to the fruits of their labors.
- Editors must preserve the anonymity of referees unless there is a credible allegation of misuse.

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57

On Being A Scientist: Responsible Conduct In Research

- **COMMITTEE ON SCIENCE, ENGINEERING, AND PUBLIC POLICY**
- **NATIONAL ACADEMY OF SCIENCES**
- **NATIONAL ACADEMY OF ENGINEERING**
- **INSTITUTE OF MEDICINE**
- **NATIONAL ACADEMY PRESS**



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On Being A Scientist: Responsible Conduct In Research

- Notice
- Committee on Science, Engineering, and Public Policy
- Preface
- Acknowledgments
- A Note on Using This Booklet
- Full Contents of Report (Complete ASCII Version of Report: 110K)
- Introduction
- The Social Foundations of Science
- Experimental Techniques and the Treatment of Data
- Values in Science
- Conflicts of Interest
- Publication and Openness
- The Allocation of Credit
- Authorship Practices
- Error and Negligence in Science
- Misconduct in Science
- Responding to Violations of Ethical Standards
- The Scientist in Society
- Bibliography
- Appendix: Discussion of Case Studies

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59

Acknowledgement :

This material is based on the research ethics lectures by Prof. Jan Gustaffson, CS dept, at the Malardalens University, Sweden and I gratefully acknowledge the same.

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60