

MATH 100 – Introduction to the Profession

Ethics for Applied Mathematicians

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Outline

- 1 Cheating Everywhere
- 2 Professional Ethics
- 3 Professional Ethics for Mathematicians
- 4 Ethics as a Student





Cheating scandal: player disqualified for cell phone use

27.10.2012 – Actually, as the accused player, German GM Falko Bindrich, points out: not for proven use but for refusing to allow the arbiter to examine the phone he had with him during multiple toilet visits during last weekend's Bundesliga round. The rules permit the arbiter to check in case of justified suspicion, and so Bindrich was disqualified and the point awarded to his opponent. Long, compelling read.

[Chessbase, Oct.27, 2012]





Cheating in Sumo wrestling [Freakonomics (2009)]



Professional Ethics

A good reason why all scientists and mathematicians need to strive to live up to the highest ethical standards:



This guy is nuts — right?

“A well-known psychologist in the Netherlands whose work has been published widely in professional journals falsified data and made up entire experiments. . . . The psychologist, Diederik Stapel, of Tilburg University, committed academic fraud in ‘several dozen’ published papers, many accepted in respected journals and reported in the news media.”

[Noted Dutch Psychologist, Stapel, Accused of Research Fraud]



Figure : “I have failed as a scientist and researcher.”



In a survey of more than 2,000 American psychologists scheduled to be published this year, Leslie John of Harvard Business School and two colleagues found that

- 70 percent had acknowledged, anonymously, to cutting some corners in reporting data.
- About a third said they had reported an unexpected finding as predicted from the start,
- and about 1 percent admitted to falsifying data.

[Measuring the Prevalence of Questionable Research Practices. . .]



Why does this happen?

*“If high-impact journals want this kind of surprising finding, then there is **pressure on researchers** to come up with this stuff.”*

*Bad things happen when **researchers feel under pressure**. . .
“There’s a slippery slope between making up your data and torturing your data.”*

[Fraud Scandal Fuels Debate Over Practices of Social Psychology]



It's all done with math/statistics

*To show just how easy it is to get a nonsensical but “statistically significant” result, three scholars, in an article in November’s Psychological Science titled “False-Positive Psychology,” first showed that listening to a children’s song made test subjects feel older. Nothing too controversial there. Then they “demonstrated” that listening to the Beatles’ “When I’m 64” made the test subjects literally younger, relative to when they listened to a control song. What the researchers omitted, as they went on to explain in the rest of the paper, was just **how many variables they poked and prodded before sheer chance threw up a headline-making result**—a clearly false headline-making result.*

[Fraud Scandal Fuels Debate Over Practices of Social Psychology]



Well, those were psychologists. In math that isn't possible . . .

*“We note that the **contents** of the Sreenivas-Srinivas paper **are taken nearly verbatim from** the Luedtke-Ahmed preprint that was posted to the preprint server Optimization Online. Specifically, the **abstracts are identical**. The text of the Sreenivas-Srinivas paper is **essentially a subset** of that of the longer Luedtke-Ahmed preprint, consisting of the text beginning with the second sentence of section 3.2 and continuing to the end of the paper. The reference lists contains **exactly the same references** with the same order and numbering.”*

Much more at <http://www.siam.org/journals/plagiarism/> including letters from the plagiarizing authors.



On Nov.20, 2011, the Chronicle of Higher Education reported ["Journal Editors' Reactions to Word of Plagiarism? Largely Silence"]:
see <http://chronicle.com/article/Journal-Editors-Reactions-to/129829/>

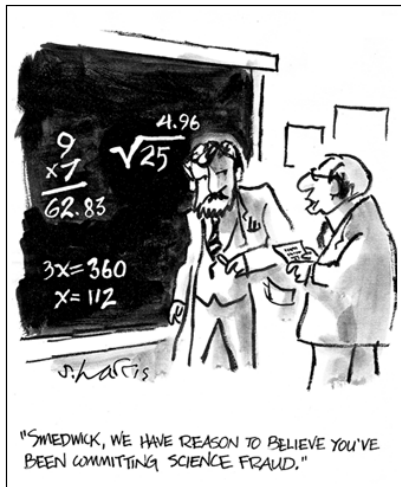
Mr. Shamir sees a larger danger here: "Science is based on sharing, and the sharing of results and ideas is protected by strict and well-defined ethics guidelines. If editors allow violating these guidelines, this whole sensitive structure might collapse."

So why did this one rather minor publication attract so many plagiarists? Mr. Shamir finds that yet another mystery. "It wasn't even such a good paper," he says.



Ethics: Codes of Conduct

- **Mathematicians:**
 - Ethical Guidelines of the AMS: [about-us/governance/policies](http://www.ams.org/about-us/governance/policies)
 - MAA Code of Ethics: http://www.maa.org/about/maa-education/code_of_ethics
 - SIAM does not have one
 - Institute of Mathematics & its Applications: http://www.ima.org.uk/code_of_conduct.cfm
 - Ethics for Mathematicians, by Fred Swednick: <http://math.iit.edu/~fredswednick/EthicsForMathematicians/>
 - Codes of Ethics and Their Limitations: <http://math.iit.edu/~fredswednick/CodesOfEthicsAndTheirLimitations/>
- **Actuaries:** <http://www.actuary.org/code.asp>



From the AMS ethical guidelines:

- To endeavor to **be knowledgeable** in their field, especially about work related to their research;
- To **give appropriate credit**, even to unpublished materials and announced results (because the knowledge that something is true or false is valuable, however it is obtained);
- To **publish full details of results** that are announced without unreasonable delay, because claiming a result in advance of its having been achieved with reasonable certainty injures the community by restraining those working toward the same goal;
- To **use no language that suppresses or improperly detracts from the work of others**;
- To **correct in a timely way** or to withdraw work that is erroneous.



Recent Headlines

[Chronicle of Higher Education, Aug.21, 2012]

An Academic Ghostwriter, the 'Shadow Scholar,' Comes Clean

[N.Y. Times, Aug.30, 2012]

Harvard Says 125 Students May Have Cheated on a Final Exam

[N.Y. Times, Aug.31, 2012]

Harvard Students in Cheating Scandal Say Collaboration Was Accepted

[N.Y. Times, Sept.4, 2012]

How We Teach Students to Cheat

[N.Y. Times, Sept.7, 2012]

Studies Find More Students Cheating, With High Achievers No Exception

[N.Y. Times, Nov.2, 2012]

Tips From a Professional Cheat

Tips From a Professional
Cheat



See the IIT Student Handbook http://www.iit.edu/student_affairs/handbook/pdfs/handbook_fy13.pdf.

- Code of Academic Honesty (p.27)
- Code of Conduct (p.29)
- It also has lots of useful information.

Ethical behavior in a nutshell: “Do the right thing”, i.e.,

- Be honest and truthful.
- Be aware of your responsibilities.
- Respect others and their opinions.
- Do no harm to others.
- Accept responsibility for your behavior.

Much (if not all) is left for interpretation/discussion.



<http://www.cs.umd.edu/~oleary/gradstudy/node14.html>
(and also [Professional Ethics]) covers

- Academic integrity (such as cheating, fabrication and plagiarism)
- Intellectual property (guidelines on how to avoid plagiarism)
- Use of computer facilities
- Human relations (more about how *professors* should act toward students)
- Professional integrity
- Values

Important thing to notice: **there will be cultural difference in interpreting what is right**. Make sure you're aware of the code of ethics of the particular culture you're living/working in.



From [Higham]:

Plagiarism is the act of publishing borrowed ideas or words as though they are your own. It is a major academic sin. In writing, if you copy a sentence or more you should either place it in quotes and acknowledge the source via a citation, or give an explicit reference such as “As Smith observed”

Plagiarism Book Is Plagiarized

PALO ALTO, Calif., June 5 (UPI) — Stanford University said today it had learned that its teaching assistant’s handbook section on plagiarism had been plagiarized by the University of Oregon. Stanford issued a release saying Oregon officials conceded that the plagiarism section and other parts of its handbook were identical with the Stanford guidebook. Oregon officials apologized and said they would revise their guidebook.

The New York Times

Published: June 6, 1980

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Here's a recent case that got quite a bit of publicity:

[http://chronicle.com/article/
Who-Deserves-MITs-200000/128810/](http://chronicle.com/article/Who-Deserves-MITs-200000/128810/)

What do you think about this situation?

Similarly,

Pharmaceutical and medical device companies also do research in poor countries and still need watching, But large companies say publicly that they adhere to ethical principles.

"The problem in 1946 was that ethical rules were treated as obstacles to overcome, not as fundamental bedrock to human dignity. That can still apply today."

[N.Y. Times, Aug.30, 2011]



Finally, you might like this one, from “Fidelity in Mathematical Discourse: Is One and One Really Two?” by Philip Davis

In the old days, when table making was a handcraft, some table makers felt that every entry in a table was a theorem (and so it is) and must be correct. . . . One famous table maker used to put in errors deliberately so that he would be able to spot his work when others reproduced it without his permission.



References I

In addition to our official textbooks and the links given earlier, you may want to look at some of the following resources.



Higham, Nicholas J.

Handbook of Writing for the Mathematical Sciences (2nd Ed.).

SIAM, Philadelphia, PA, 1998.

http://epubs.siam.org/ebooks/siam/other_titles_in_applied_mathematics/ot63



Levitt, Steven D., and Stephen J. Dubner.

Freakonomics: A Rogue Economist Explores the Hidden Side of Everything.

William Morrow Paperbacks, 2009.



Bartlett, Tom.

Journal Editors' Reactions to Word of Plagiarism? Largely Silence.

The Chronicle of Higher Education, 20 Nov. 2011. <http://chronicle.com/article/Journal-Editors-Reactions-to/129829/>



References II



Berrett, Dan.

An Academic Ghostwriter, the 'Shadow Scholar', Comes Clean.

The Chronicle of Higher Education, Aug.21, 2012. <http://chronicle.com/article/An-Academic-Ghostwriter-Comes/133904/>



Blake, Michelle.

How We Teach Students to Cheat.

Motherlode Blog, Sept.4, 2012. <http://parenting.blogs.nytimes.com/2012/09/04/how-we-teach-students-to-cheat/>



Carey, Benedict.

Noted Dutch Psychologist, Stapel, Accused of Research Fraud.

The New York Times, 2 Nov. 2011.

http://www.nytimes.com/2011/11/03/health/research/noted-dutch-psychologist-stapel-accused-of-research-fraud.html?_r=1



References III



Ellin, Abby.

Term-Paper Tips From Dave Tomar, Professional Cheater.

The New York Times, Nov.2, 2012.

<http://www.nytimes.com/2012/11/04/education/edlife/term-paper-tips-from-dave-tomar-professional-cheater.html>



John, L. K., G. Loewenstein, and D. Prelec.

Measuring the Prevalence of Questionable Research Practices with Incentives for Truth-telling.

Psychological Science Vol. 23 No. 5 (2012), 524–532.



Mcneil, Donald G. Jr.

Hearing Looks at V.D. Experiments on Guatemalan Prisoners.

The New York Times, Aug.30, 2011. [http:](http://www.nytimes.com/2011/08/31/world/americas/31syphilis.html)

[//www.nytimes.com/2011/08/31/world/americas/31syphilis.html](http://www.nytimes.com/2011/08/31/world/americas/31syphilis.html)



O'Leary, Dianne P.

Professional Ethics: Taking the High Road.

SIAM News, October 2011, pp. 6–7.

<http://www.siam.org/news/news.php?id=1921>



References IV



Pérez-Peña, Richard.

Students of Harvard Cheating Scandal Say Group Work Was Accepted.
The New York Times, Aug.31, 2012.

<http://www.nytimes.com/2012/09/01/education/students-of-harvard-cheating-scandal-say-group-work-was-accepted.html>



Pérez-Peña, Richard.

Studies Show More Students Cheat, Even High Achievers.
The New York Times, Sept.7, 2012.

<http://www.nytimes.com/2012/09/08/education/studies-show-more-students-cheat-even-high-achievers.html>



Pérez-Peña, Richard, and Jess Bidgood.

Harvard Says 125 Students May Have Cheated on Exam.
The New York Times, Aug.30, 2012.

<http://www.nytimes.com/2012/08/31/education/harvard-says-125-students-may-have-cheated-on-exam.html>



References V



Shea, Christopher.

Fraud Scandal Fuels Debate Over Practices of Social Psychology.

The Chronicle of Higher Education, 13 Nov 2011. [http:](http://chronicle.com/article/As-Dutch-Research-Scandal/129746/)

[//chronicle.com/article/As-Dutch-Research-Scandal/129746/](http://chronicle.com/article/As-Dutch-Research-Scandal/129746/)



Chessbase News.

Cheating scandal: player disqualified for cell phone use.

Oct.27, 2012.

<http://www.chessbase.com/newsdetail.asp?newsid=8586> (see also

<http://www.nytimes.com/2012/11/04/crosswords/chess/chess-falko-bindrich-accused-of-cheating.html>)

