Research and Professional Ethics

For All of Us

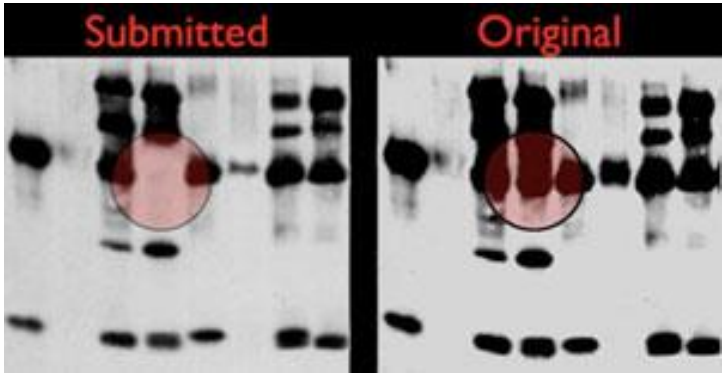
Irving P. Herman
Columbia University

APAM Seminar
Tuesday, April 28, 2023

Falsifying Data

Journals Find Many Images in Research are Fake, by Jeffrey R. Young, Chronicle of Higher Education, June 6, 2008, http://chronicle.com/weekly/v54/i39/39a00102.htm

"Kristin Roovers was a postdoctoral fellow at the University of Pennsylvania with a bright career ahead of her …. But when an **editor** of *The Journal of Clinical Investigation* did a spot-check of one of her images for an article in 2005, Ms. Roovers's research proved a little too perfect. The image had dark bands on it, supposedly showing different proteins in different conditions. **"As we looked at it, we realized the person had cut and pasted the exact same bands" over and over again,** says Ushma S. Neill, the journal's executive editor. In some cases a copied part of the image had been flipped or reversed to make it look like a new finding. **"The closer we took a look, the more we were convinced that the data had been fabricated or manipulated in order to support the conclusions,**" Ms. Neill says.



A common type of image tampering found by Hany Farid, of Dartmouth College, is the use of Photoshop to delete portions of a cell-culture image and thereby change research results. Mr. Farid created a manipulated image (far left) to show how easy it is to do, and how difficult to detect. (Image by Hany Farid)

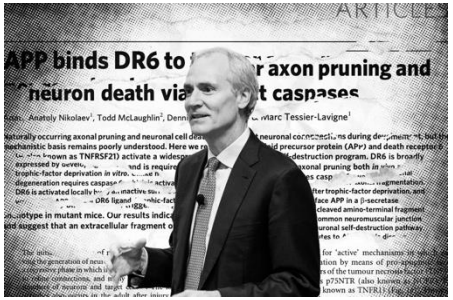
The federal **Office of Research Integrity** says that 44 percent of its cases in 2005-6 involved accusations of image fraud, compared with about 6 percent a decade ago. "Doctored images are troubling because they can mislead scientists and even derail a search for the causes and cures of disease. **Ten to 20 (of the 300-350) of the articles accepted by *The Journal of Clinical Investigation* each year show some evidence of tampering, and about five to 10 of those papers warrant a thorough investigation, says Ms. Neill**."

Latest updates: Stanford president under investigation for research misconduct

The Stanford Daily Updates including Feb. 17, 2022 at 10:15 p.m.
https://stanforddaily.com/2023/02/16/latest-updates-stanford-president-under-investigation-for-research-misconduct/

- "**University President Marc Tessier-Lavigne is under investigation for alleged research misconduct** following allegations first reported in The Daily that **multiple papers co-authored by the president contain altered images**."

- **"Tessier-Lavigne maintained that the alleged image manipulations "had no bearing on the findings or conclusions" of his papers.** Scientists contest that assertion. He also **claimed to have had no involvement with the alleged duplications in a number of the papers** – Stanford scientists pointed out that the **Research Policy Handbook states "defense of minimal participation…is entirely inapplicable when one is coauthor of the disputed work**."



Graphic: MICHELLE FU/The Stanford Da

Internal review found 'falsified data' in Stanford President's Alzheimer's research, colleagues allege

By Theo Baker Feb. 17, 2023, 12:17 a.m. https://stanforddaily.com/2023/02/17/internal-review-found-falsified-data-in-stanford-presidents-alzheimers-research-colleagues-allege/

'MTL knew': Misconduct allegations independently corroborated in private correspondence to special committee

By Theo Baker March 6, 2023, 1:36 a.m. https://stanforddaily.com/2023/03/06/mtl-knew-misconduct-allegations-independently-corroborated-in-private-correspondence-to-special-committee/

Bosses Are Catching Job Applicants Using ChatGPT for a Boost—
As AI reaches the masses,
workers are using it to dress up job applications and résumés

By Ann-Marie Alcántara Updated March 14, 2023 4:11 pm ET
https://www.wsj.com/articles/if-chatgpt-writes-your-cover-letter-is-it-cheating-some-bosses-think-so-b62454ba

"… The company prompts candidates to write a tweet and a press release about microwave towers, a niche topic that requires research, Ms. Qi said. **Normally, most candidates fail the test. This time all five passed.** … Lo and behold, **I got pretty much the same answer that all five candidates had submitted to me**," she said. …

… **Employers, who have long used AI to screen potential employees**, aren't always disqualifying applicants who use ChatGPT, but they are scrambling to figure out how to assess candidates who may be using the tool to give them an edge.

… **Employers are already finding ways to catch applicants who cheat with AI**."

Faking images and misuse of AI/Chat GPT are recent examples of evolving research and professional ethical situations from emerging technologies

Fraud at Universities:

University of South Carolina employee indicted on corruption charges

The Post and Courier By Jack Evans jevans@postandcourier.com Jul 18, 2017
http://www.postandcourier.com/news/university-of-south-carolina-employee-indicted-on-corruption-charges/article_352d8caa-6bda-11e7-a9a5-97293f0f50d3.html


Blake A. Langland, from article

"An employee in the University of South Carolina's electrical engineering department faces several corruption charges after **he allegedly diverted hundreds of thousands of dollars of grant money to pay himself extra fo work he was already being paid for**.

Blake A. Langland, 48, a project manager in the department, was indicted June 21, according to a press release from South Carolina Attorney General Alan Wilson's office.

Langland and a business he owns allegedly received $650,000 in grant money that USC believed was going to a project subcontractor, the indictment alleges.

Langland is charged with three counts of receiving anything of value to influence the action of a public employee, and one count each of use of official position or office for financial gain and acceptance of rebates or extra compensation, according to the release. …

"Through these mechanisms Langland was essentially able to 'double dip' and pad his full-time salary," according to the indictment.

Langland also essentially billed the university for unrelated projects by his own business, the indictment alleges. He allegedly did most of the billing during normal business hours using USC computers on USC property."

Craig Grimes, Ex-Penn State Professor, Sentenced For More Than $3 Million In Research Grant Fraud

http://www.huffingtonpost.com/2012/12/03/craig-grimes-sentenced_n_2232658.html

AP:12/03/2012

Craig Grimes
ernmag.com

- 'A former Penn State University professor has been sentenced to nearly 3 1/2 years in federal prison for more than $3 million in research grant fraud.

- Prosecutors said 55-year-old Craig Grimes of Raleigh, N.C., defrauded the National Institutes of Health between 2006 and 2011 while a PSU professor of material sciences and engineering.

- Authorities say his State College company got a $1.2 million grant, but funds **weren't sent to Hershey Medical Center as promised and clinical studies weren't done**. Authorities say Grimes also made false statements for a $1.9 million solar energy grant.

- Grimes told the judge who sentenced him Friday to 41 months that he was zealous in wanting to help the world.

- Assistant U.S. Attorney Joseph Terz said Grimes **"is not a mad scientist. He's a dishonest scientist."**'

Research Misconduct Case: Grant Plagiarism

Case Summary: Karnik, Pratima
DEPARTMENT OF HEALTH AND HUMAN SERVICES
Office of the Secretary
Findings of Research Misconduct
http://ori.hhs.gov/content/case-summary-karnik-pratima
http://retractionwatch.com/2013/08/09/case-western-dermatology-department-hit-with-second-ori-sanction-within-6-months/

- "Pratima Karnik, Ph.D., Case Western Reserve University, … Assistant Professor, Department of Dermatology, … engaged in research misconduct in research submitted to the National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS), National Institutes of Health (NIH), in grant application R01 AR062378."

- "ORI found that the Respondent engaged in **research misconduct by plagiarizing significant portions from research grant application** R21 AR061881 that she had reviewed for NIAMS, NIH, and inserting that text into her submitted grant application R01 AR062378-01. Respondent also plagiarized significant portions of text from (eight) scientific articles and one U.S. patent application available on the Internet."

- "Dr. Karnik has entered into a Voluntary Settlement Agreement and has voluntarily agreed for a period of two (2) years, beginning on July 22, 2013:
(1) To have her research supervised; … to ensure the scientific integrity of her research contribution …
(2) That any institution employing her shall submit …, a certification to ORI that the content is free of plagiarized material, …..
(3) To exclude herself voluntarily from serving in any advisory capacity to PHS …"

Walmart Vice President Forced Out for Lying About Degree

https://www.nytimes.com/2014/09/17/business/17tovar.html

By RACHEL ABRAMS SEPT. 16, 2014 New York Times

David Tovar;
By Earl Wilson/The New York Times

- David Tovar, the vice president for corporate communications at Walmart, was forced to resign after the retailer discovered that he had lied about receiving an art degree from the University of Delaware.

- "It's my mistake. I own it," Mr. Tovar … "I definitely didn't disclose that I didn't have a degree, and there were times where it was probably an error of omission." Mr. Tovar said he had thought he had the necessary credits to graduate from the University of Delaware with an art degree in 1996 but discovered months after participating in the graduation ceremony that he was "a couple of credit hours short." … He said in the interview that he did not remember what his résumé stated.

-On Tuesday, Mr. Tovar said that Walmart had planned to promote him to a senior vice president position and discovered his education history during a routine background check that was more rigorous than the one conducted when he was hired. "I suppose the irony here is that I was about to be promoted and now a couple weeks later I'm going to be leaving the company,"…

- Mr. Tovar is not the first high-level executive to be accused of misrepresenting his education history. In 2012, Yahoo's chief executive, Scott Thompson, resigned under pressure after it was revealed that he had lied about receiving a computer science degree.

Manhattan Coach Is Denied South Florida Job After Résumé Check

By ZACH SCHONBRUN and MATT KRUPNICK, MARCH 26, 2014
http://www.nytimes.com/2014/03/27/sports/ncaabasketball/manhattan-coach-denied-south-florida-job-after-resume-check.html

- Talks broke down between Manhattan Coach Steve Masiello and South Florida late Tuesday after South Florida officials discovered an inaccuracy on his résumé, which lists him as having graduated from the University of Kentucky in 2000. A spokesman at Kentucky said Masiello attended the college from 1996 to 2000 but did not receive a degree. His biography on Manhattan's website said he held a degree in communications from Kentucky.….

- University policy requires a head coach to have at least a bachelor's degree.

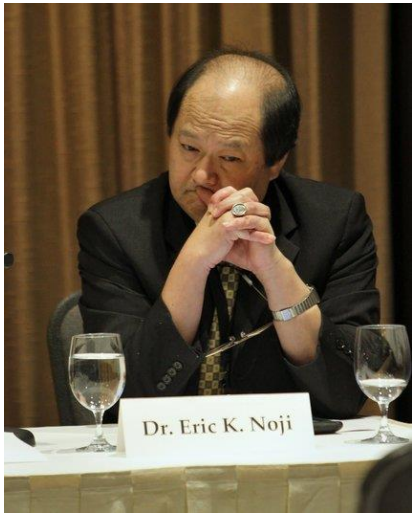
- Manhattan officials said in a written statement that Masiello had been put on leave while "reviewing his degree status with the University of Kentucky."

Doctors Urge Elite Academy to Expel a Member Over Charges of Plagiarism

https://www.nytimes.com/2018/04/09/health/academy-medicine-plagiarism.html By SHEILA KAPLAN APRIL 9, 2018

"Dr. Noji also, until recently, listed impressive honors: the Ordre des Palmes Academiques, presented by President Hollande of France; nomination to the Royal College of Physicians of London; the Antarctica Medal of Honor for Scientific Exploration; and an M.B.A. from Stanford.

But the French **never bestowed that award** on Dr. Noji. The Royal College **didn't nominate him**. There is **no such prize** as the Antarctica Medal of Honor for Scientific Exploration. Stanford Business School says it **has no record of his existence**. And **some of his papers plus a book chapter were copied** from former colleagues at the Centers for Disease Control and Prevention and the Agency for International Development, according to a complaint filed with the academy by Dr. Arthur Kellermann, dean of the nation's military medical school."



"Dr. Eric K. Noji, a disaster medicine specialist, was elected to the elite **National Academy of Medicine** in 2005. Other members have sought his ouster, accusing him of plagiarism and fraud" Credit Alabastro Photography

Accused of More Than "Just" Plagiarism

Document Claims Drug Makers Deceived a Top Medical Journal

By Kati Thomas, New York Times, Wednesday, March 2, 2016 pages B1, B8

- Did Duke University researchers **leave out critical lab data on testing the safety** of the (Johnson & Johnson, Bayer) blood-clotting drug Xarelto from their New England Journal of Medicine (NEJM) paper, and **deceive editors** there?
- **The patients may have been given the wrong doses from a faulty machine** in the Duke Clinical Research Institute testing lab.
- In NEJM Duke claimed that this did not affect the trial results
- Duke **took some more data** using a central laboratory, but **did not report the results** in NEJM
- A manuscript reviewer asked **whether additional data were available**
- Duke **answered no** to this query, as it was posed to them, after rephrasing by the NEJM editor: **whether additional data were available throughout the course of the trial**

Kobe Steel Scandal Is Now Subject of Justice Department Inquiry

By NEAL E. BOUDETTE OCT. 17, 2017
https://www.nytimes.com/2017/10/17/business/kobe-steel-justice-department.html

- "The company said Tuesday that its American unit, Kobe Steel USA, had **received a request from the Justice Department** for documents and records related to any substandard metals sold to customers in the United States.
- Kobe Steel acknowledged earlier this month that **it had falsified quality data for years and sold substandard or potentially substandard aluminum, copper and powdered steel — used to make molded parts, like gears —** to companies around the world. The affected customers include Boeing, Ford, General Motors and other major American manufacturers.
- The company is reviewing … whether any substandard metals were used in **end products such as cars, planes and trains. … some 500 companies may have been supplied metal products that had falsified quality records, some of which date back as far as 2007.**"

Volkswagen Uses Software to Fool EPA Tests

By Benjamin Hulac, ClimateWire on September 21, 2015
http://www.scientificamerican.com/article/volkswagen-uses-software-to-fool-epa-pollution-tests/

- "National and state air regulators … accused the company of installing software in about half a million cars **designed to pass federal emissions tests but release higher-than-acceptable levels in everyday driving situations**.

©iStock.com

- The software allowed VW cars to activate emission controls during emission tests **but during normal use to release up to 40 times the permitted amount of nitrogen oxides** …"

VW Presentation in '06 Showed How to Foil Emissions Tests

By JACK EWING **APRIL 26, 2016** New York Times
http://www.nytimes.com/2016/04/27/business/international/vw-presentation-in-06-showed-how-to-foil-emissions-tests.html

"A PowerPoint presentation was prepared by a top technology executive at Volkswagen in 2006, **laying out in detail how the automaker could cheat on emissions tests** in the United States."

Volkswagen Manager Sentenced to Prison Term in Emissions-Fraud Case (2017)

Wall Street Journal; Mike Spector and Mike Colias Updated Dec. 6, 2017 4:52 p.m. ET T
http://www.wsj.com/articles/volkswagen-manager-sentenced-to-prison-term-in-emissions-fraud-case-1512595482?mg=prod/accounts-wsj downloaded 12-20-17

"**A Volkswagen manager was sentenced to seven years imprisonment** and will pay a $400,000 fine for participating in the German auto giant's emissions fraud,…Oliver Schmidt, 48 years old, received the sentence from U.S. District Judge Sean Cox on Wednesday afternoon during a hearing in a Detroit federal court. Mr. Schmidt in August pleaded guilty to charges of conspiracy and violating environmental law. …"

"**Mr. Schmidt admitted to concealing from regulators Volkswagen's use of illegal software on nearly 600,000 vehicles** that allowed them to dupe government emissions tests while polluting far beyond legal limits on the road."

"**Mr. Schmidt maintained he was following orders from superiors when misleading regulators**, but also expressed remorse. **"I accept the responsibility for the wrongs I committed,"** Mr. Schmidt said, appearing emotional while pausing to compose himself before the judge rendered his sentence. **"I made bad decisions, and for that I'm sorry."**

"…James Liang, an **engineer** who pleaded guilty to charges and cooperated with federal prosecutors, was sentenced to **40 months imprisonment** in August. …"

10 Monkeys and a Beetle: Inside VW's Campaign for 'Clean Diesel' (2018)

https://www.nytimes.com/2018/01/25/world/europe/volkswagen-diesel-emissions-monkeys.html
by Jack Ewing downloaded 1-26-18

"In 2014, as evidence mounted about the harmful effects of diesel exhaust on human health, scientists in an Albuquerque laboratory conducted an unusual experiment: Ten monkeys squatted in airtight chambers, watching cartoons for entertainment as they inhaled fumes from a diesel Volkswagen Beetle. German automakers had financed the experiment in an attempt to prove that diesel vehicles with the latest technology were cleaner than the smoky models of old."

"But the American scientists conducting the test were unaware of one critical fact: **The Beetle provided by Volkswagen had been rigged to produce pollution levels that were far less harmful in the lab than they were on the road. The results were being deliberately manipulated." …**

Dr. McDonald said he did not know the Volkswagen Beetle was equipped with software that recognized when the car was being tested on a treadmill. … Even so, the study did not provide a clear finding. **The researchers struggled to produce a paper that they could publish, a condition for receiving full payment. …** Discussions about publishing the study continued until last year … implied during cross-examination that Dr. McDonald **had pushed to publish the results so that the institute could collect $71,000 owed under the contract.**

Broken bolts: Structural problems on the Gov. Mario M. Cuomo (Tappan Zee) Bridge were covered up

A whistleblower sounded the alarm. Experts described the potential peril to the span. The state's investigation was lackluster.

BRENDAN J. LYONS March 7, 2021 Updated: March 10, 2021 1:56 p.m.
https://www.timesunion.com/news/article/mario-cuomo-bridge-structural-problems-covered-up-15594755.php

PHOTO BY WILL WALDRON/TIMES UNION
bridge opened 2017

"**A high-strength bolt snapped at the threads** as an ironworker, Jimmy Jordan, used a torque wrench to tighten it into a steel plate connecting two massive girders. … It was January 2016, and Jordan was part of the team constructing the Tappan Zee Bridge replacement at the project's main assembly site along the Hudson River … . Construction of the $3.9 billion twin span … had been under way for a little more than two years when Jordan's injury led to a series of revelations that would call into question the new bridge's structural safety."

"It would emerge that **dozens of bolts had similarly broken at the port assembly site, an abnormally high number that indicated the potential for a very serious problem. Bolts also had been breaking on the assembled girders loaded onto barges, and even on some pieces already installed at the bridge** …"

Safety and Whistleblowing

Broken bolts: Structural problems on the Gov. Mario M. Cuomo (Tappan Zee) Bridge were covered up

(continued)

BRENDAN J. LYONS March 7, 2021 Updated: March 10, 2021 1:56 p.m.
https://www.timesunion.com/news/article/mario-cuomo-bridge-structural-problems-covered-up-15594755.php

"On July 1, 2016 — six months after Jordan's injury — a safety manager at the port arranged a meeting … with **Ken Riley**, a quality assurance inspector with Alta Vista, a **private engineering firm that had been hired by the New York Thruway Authority**. He told Riley that Tappan Zee Constructors, the private corporation building the bridge for the state authority, **may have committed fraud by concealing the fact that large numbers of bolts had been breaking due to either improper installation techniques, manufacturing defects, or both**.

PHOTO BY WILL WALDRON/TIMES UNION
bridge opened 2017

The safety manager, James S. McNall, … played tapes for the inspector of conversations that he had secretly recorded five months earlier while interviewing engineers and ironworkers at the port. The conversations appeared to confirm that the contractor's team **had been hiding the matter** from the Thruway Authority and its inspectors… Riley, according to McNall's account to investigators, said that he believed **the recordings revealed potential criminal fraud**. Riley …**reported the alleged fraud to the state inspector general's office**."

Safety and Whistleblowing

Carelessness, sloppiness, recklessness extends beyond that in obtaining research results, and as we will see is one manifestation of research misconduct, to safety and operations.

A near-disaster at a federal nuclear weapons laboratory takes a hidden toll on America's arsenal

http://www.sciencemag.org/news/2017/06/near-disaster-federal-nuclear-weapons-laboratory-takes-hidden-toll-america-s-arsenal

"Technicians at the government's Los Alamos National Laboratory settled on what seemed like a surefire way to win praise from their bosses in August 2011: … they gathered eight rods painstakingly crafted out of plutonium, and positioned them side-by-side on a table to photograph how nice they looked. …"

"Eight rods of plutonium within inches — had a few more rods been placed nearby it would have triggered a disaster."

"As luck had it that August day, a supervisor returned from her lunch break, noticed the dangerous configuration, and ordered a technician to move the rods apart. …(but, later) Virtually all of the Los Alamos engineers tasked with keeping workers safe from criticality incidents decided to quit, having become frustrated by the sloppy work demonstrated by the 2011 event …"

LOS ALAMOS NATIONAL LABORATORY/U.S. DEPARTMENT OF ENERGY

Gaming the USNW College Rankings

Gaming the College Rankings

By RICHARD PÉREZ-PEÑA and DANIEL E. SLOTNIK Published: January 31, 2012
http://www.nytimes.com/2012/02/01/education/gaming-the-college-rankings.html?emc=eta1

.. **Claremont McKenna, part of the Claremont Colleges cluster outside Los Angeles, acknowledged Monday that a senior officer had resigned after admitting that he had inflated the average SAT scores given to U.S. News since 2005.**

In one recent example, **Iona College in New Rochelle,** north of New York City, **acknowledged last fall that its employees had lied for years not only about test scores, but also about graduation rates, freshman retention, student-faculty ratio, acceptance rates and alumni giving.**

Other institutions have found ways to manipulate the data without outright dishonesty. …

In 2008, **Baylor University offered financial rewards to admitted students to retake the SAT in hopes of increasing its average score.**

More Rankings Rigging

Inside Higher Ed June 8, 2009 By Scott Jaschik http://www.insidehighered.com/news/2009/06/08/usc#ixzz1tB3acAPV

How many members of the National Academy of Engineering are on the faculty at the University of Southern California? … when reporting to U.S. News & World Report, which uses NAE members on the faculty as one criterion in its rankings of top engineering graduate schools (where USC landed at No. 7), Southern California claimed 30 members. … But according to the National Academy of Engineering, USC has only 22 members on its faculty. Postcript: USC was tied for #11 in 2012.

- **Columbia University admits to reporting inaccurate data for US News college rankings**

Jordan Mendoza USA TODAY 3:34 pm ET Sept. 12, 2022 https://www.usatoday.com/story/news/education/2022/09/12/columbia-university-incorrect-data-us-news-college-rankings/10358383002/

- **U.S. News Dropped Columbia's Ranking, but Its Own Methods Are Now Questioned**

https://www.nytimes.com/2022/09/12/us/columbia-university-us-news-ranking.html **(dropped from 2 to 18)**

Range of Discussion

Data and Research

Authorship

Papers and Theses - Content

Preparing Proposals

Reviewing Papers and Proposals

Employment and Conflicts of Interest

Other - medical, society, industrial ethics

Responsible Conduct of Research

- We will focus on these areas

Professional and other Ethics

- We will sample topics in professionalism, engineering/industrial ethics, and medical ethics

All of these areas can impact your career here at Columbia, and afterwards—however your career progresses

At The Core

Learning to be aware that you are facing an ethical issue

Developing ways to handle such an ethical issue

FAQs:

Why are they making me take this seminar?

Don't they trust me?

When "violations" occur, it is very serious.

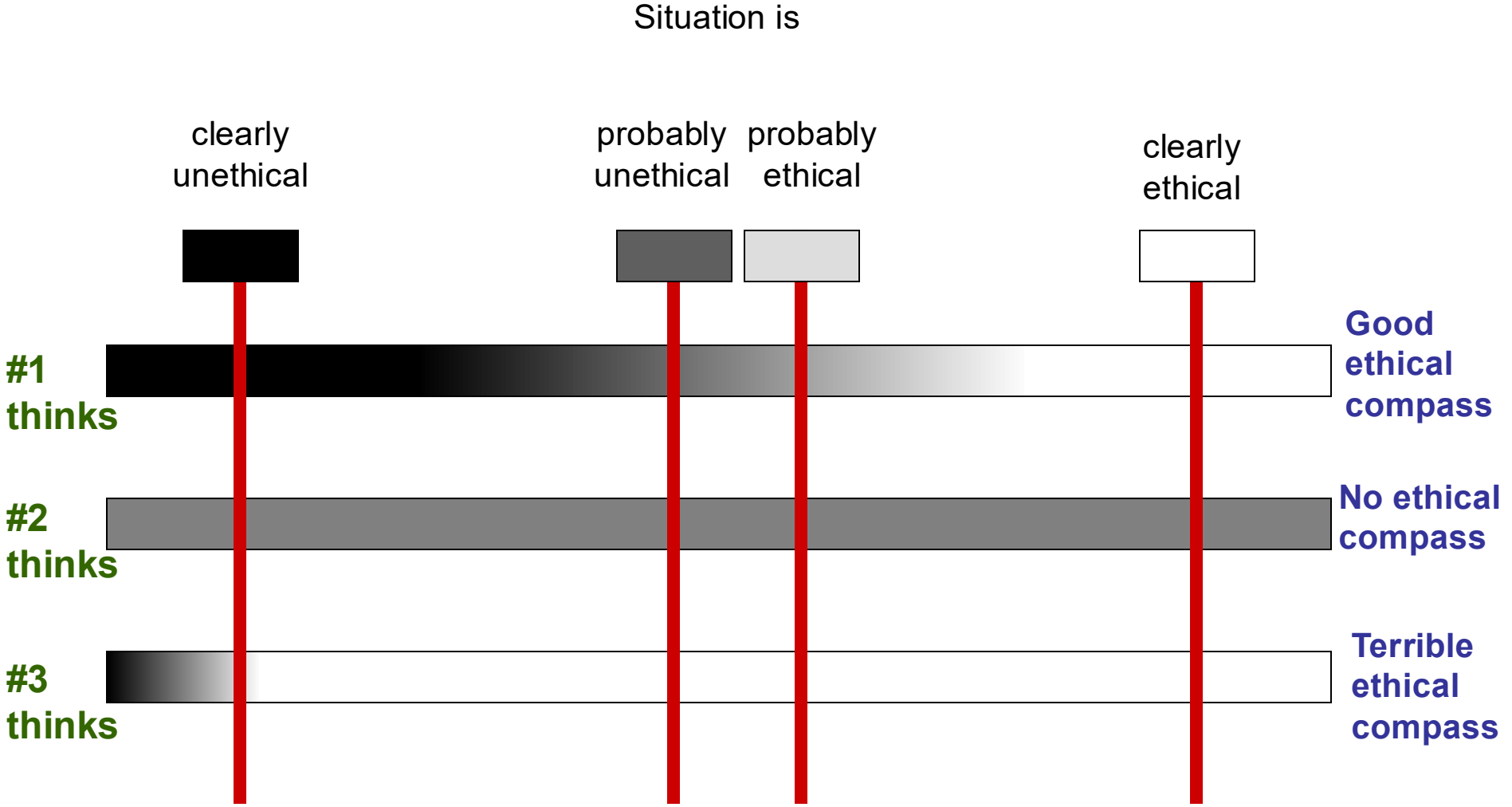
Every year I am shocked by new revelations of problems in ethics – in the news, that I see, that I hear about, …

THERE IS SO MUCH BRAND NEW MATERIAL FOR THIS SEMINAR EVERY YEAR!!!

FAQ:
Do faculty members take seminars like this?

No

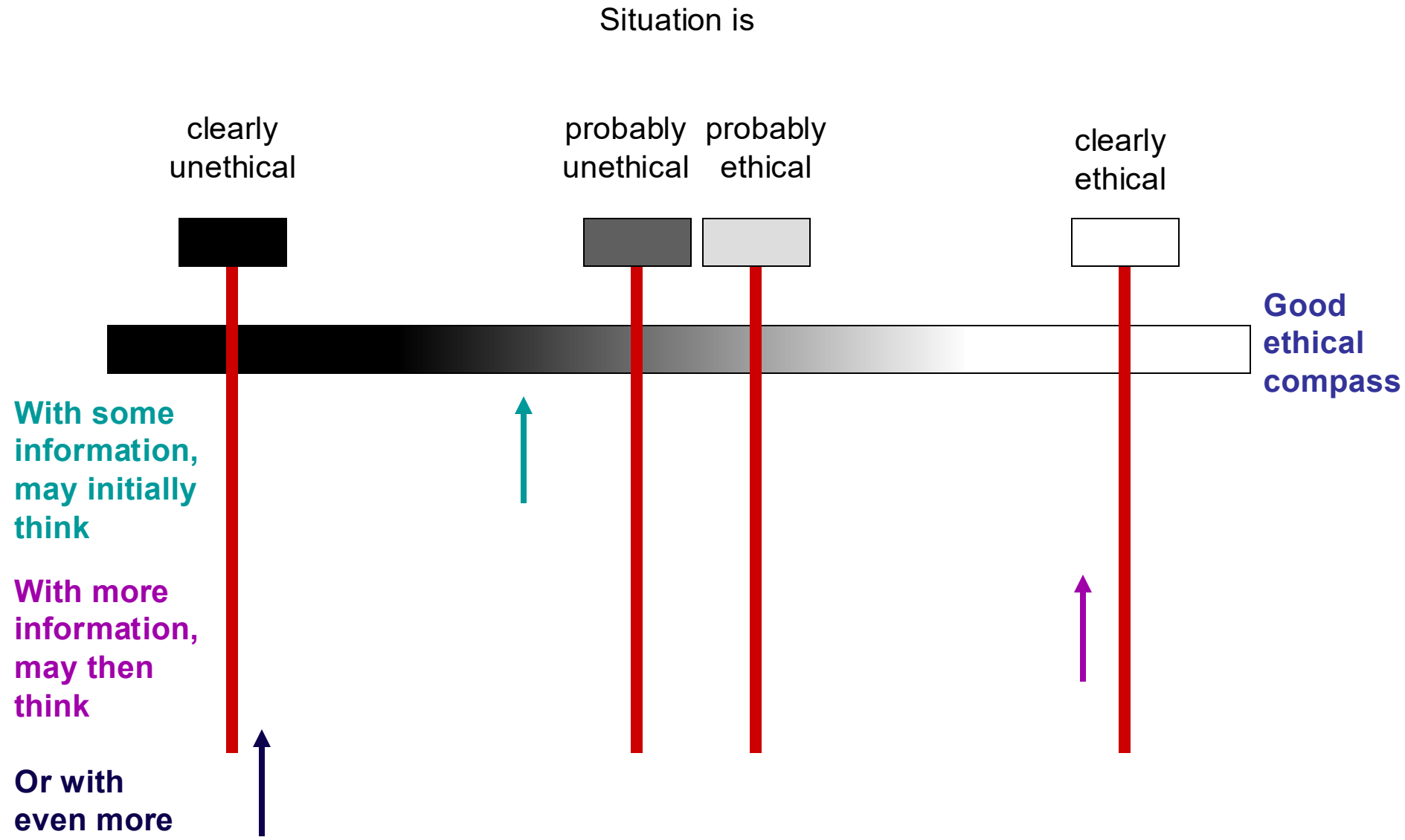
Why Do This?


Situation is
clearly unethical
probably unethical
probably ethical
clearly ethical
#1 thinks
#2 thinks
#3 thinks
Good ethical compass
No ethical compass
Terrible ethical compass

Police officers say that crimes are committed by bad people doing bad things and by good people doing stupid things.

We could say that research misconduct is conducted by unethical people doing unethical things and by ethical people doing stupid things.

Why Do This?


Situation is
clearly unethical
probably unethical
probably ethical
clearly ethical
Good ethical compass
With some information, may initially think
With more information, may then think
Or with even more

Ethics Awareness and Education

Ethics education is becoming a standard component in graduate and undergraduate studies

- a very good idea
- devote classes to it
  or at least multi-day workshops
- equally important for experimentalists
  and theorist/modelers
- now being mandated by NSF

Our start:

This seminar (first and second year doctoral students)

On-line course

Our two hours today is not enough time to devote to this (and overall <10 hours out of >8,000 hours)

What can we accomplish in two hours?

Get all to start thinking about ethics.
This translates from professional conduct of research to all career choices.

Can we change the ethics of the unethical?

Perhaps usually not, but we can make some of them fearful of committing unethical acts because of the consequences.

Method: Discuss Case Histories

Case synopses are online at http://www.columbia.edu/~iph1/

- some are referenced
- some come from personal knowledge or from others
- many of the more outrageous ones are based on real events

See references cited in the online information

- Columbia University

Institutional Policy on Misconduct in Research, February 3, 2006
http://www.columbia.edu/research/index.html
Research Misconduct: Responsible Conduct of Research
http://ccnmtl.columbia.edu/projects/rcr/rcr_misconduct/foundation/index.html

- On Being A Scientist: Responsible Conduct In Research,

National Academy Press, 1995 and 2009

- received by all incoming doctoral track APAM graduate students

- http://www.nap.edu/readingroom/books/obas/

- See https://ori.hhs.gov https://ori.hhs.gov/research-misconduct-0

- List of scientific misconduct incidents – Wikipedia

- Plastic Fantastic: How the Biggest Fraud in Physics Shook the Scientific World, Eugenie Samuel Reich (Macmillan Science) 2009. Jan Hendrik Schön

Method: Discuss Case Histories

On Being A Scientist: Responsible Conduct In Research,
National Academy Press, 1995 and 2009

- received by all incoming doctoral track APAM graduate students

- http://www.nap.edu/readingroom/books/obas/

1995

* 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

2009

Advising and Mentoring
The Treatment of Data
Mistakes and Negligence
Research Misconduct
Responding to Suspected Violations of Professional Standards
Human Participants and Animal Subjects in Research
Laboratory Safety in Research
Sharing of Research Results
Authorship and the Allocation of Credit
Intellectual Property
Competing Interests, Commitments, and Values
The Researcher in Society

The Advantage of this Approach: Theory vs. Practice

Answering questions correctly on an ethics exam

vs.

What you actually do

What you should do

vs.

What you can do (and get away with)

Raising Ethical Issues

When is an issue an ethical one?

When is it just an honest mistake or misunderstanding or a legitimate difference in opinion?

When is it sloppiness, which is itself unprofessional if it is deemed to be “reckless’?

When is it just a matter of style or local convention?

When is an issue minor or trivial and when is it major and significant-and worth following up on?

When is something a fraud or hoax, and when is the issue really difficult scientific reproducibility?

Some “checks and balances” are in place to alleviate unethical situations, but they are not perfect!

How to Identify, Understand, and Resolve Ethical Issues?

Talk to:

Colleagues

Advisor

Department Chair

Department Conciliators

Office of Research Compliance and Training

Ombud's Office

Underlying "Reasons" for Unethical Actions

- Good old-fashioned **greed**
- **Rewards could outweigh the risks**
  - **especially if not caught**
  - not wrong if not caught
  - my family comes first
- **Easier and faster to cut corners** (skip work, copy, plagiarize, cheat)
- **Easier to ask for forgiveness than permission**
- **All's fair in love, war, and my work**
  - want to get ahead at all costs
- **Special circumstances** for a given case
  - more important than ethics in this case
- **Organizational pressures**
- **Ignorance** of the ethical, moral or legal standards

Maybe before, but NOT after this seminar!

The Normative Ethics
(The Study of Ethical Action)

Contentment and serenity (Stoicism)

Maximum pleasure and minimum pain (Hedonism)

Prudently-attained pleasure is virtue (Epicureanism)

Consequences of the action, with ends justifying means (Consequentialism)

Greatest happiness to the greatest number (Bentham, Mills; Utilitarianism)

Follow the acts (rules, duties), not consequences; Do unto others as they would have done unto you (Kant; Deontology)

Follow social consequences (not consequences, duty) (Pragmatic Ethics)

Impact on community and family (Role Ethics)

Equal liberties, fairness, opportunities for all (Social Justice; John Rawls)

Lawrence Kohlberg's Stages of the Moral Development of (Many) People

Judge morality of an action by its direct consequences (Children and some adults)

1. Obedience and Punishment: *How can I avoid punishment?*
2. Self-interest: *What's in it for me?*

Judge morality by comparing them to society's views and expectations (Adolescents and some adults)

3. Interpersonal accord and conformity: *Social norms*, *Be a good boy/girl attitude to live up to expectations*
4. Authority and social-order maintenance: *Law and order morality*

An individual's own moral perspective may take precedence over society's view (Many, but not all adults)

5. Laws are social contract and not edicts: *Need to be changed when they do not meet general welfare, by majority decision and compromise*

6. Universal ethical principles: *Principled conscience, laws must be grounded in justice, must view interactions with others as "in their shoes"*

Wikipedia

Normative Ethics and the Highest Levels in the Kohlber Development

are used in

Applied Ethics

(What a Person Must Do in a Given Situation)

which is our main focus here

There are different competing interests

and different ways to present and address them

The Ethical Matrix: An Assessment Tool

Interests of stakeholders vs. guiding principle (tool of Ben Mepham)

Radioactive waste management facility siting	Autonomy	Justice	Wellbeing
Government institutions	Authority of elected officials	Build partnerships and sharing authority	Adopting strategies to lower risk to the aggregate population
Nuclear industry	Freedom to generate nuclear-powered electricity	Benefits of ensuring electricity production outweigh risks/costs to public	Reduce risks to communities, future generations, workers, and the environment
Host community	Self determinism	Receiving compensation	Having protection from risks. Long-term socio-economic stability. Freedom from social stigma
Future generations	Freedom to adopt better future waste solutions	Better living than for current generations	Continuing unhindered access to resources
The environment	Represent non-human interests	Ensuring equal value of humans and nonhumans	Maintaining biodiversity, prevent ecosystem degradation and resources depletion

Adapted from “Evaluating the 'Ethical Matrix' as a Radioactive Waste Management Deliberative Decision-Support Tool”, Matthew Cotton, Environmental Values, Volume 18, Number 2, May 2009, pp. 153-176(24)

Professional Ethics – IEEE Code of Ethics

We, the members of the IEEE, in recognition of the importance of our technologies in affecting the quality of life throughout the world, and in accepting a personal obligation to our profession, its members and the communities we serve, do hereby commit ourselves to the highest ethical and professional conduct and agree:

1. to accept responsibility in making decisions consistent with the safety, health, and welfare of the public, and to disclose promptly factors that might endanger the public or the environment;
2. to avoid real or perceived conflicts of interest whenever possible, and to disclose them to affected parties when they do exist;
3. to be honest and realistic in stating claims or estimates based on available data;
4. to reject bribery in all its forms;
5. to improve the understanding of technology; its appropriate application, and potential consequences;
6. to maintain and improve our technical competence and to undertake technological tasks for others only if qualified by training or experience, or after full disclosure of pertinent limitations;
7. to seek, accept, and offer honest criticism of technical work, to acknowledge and correct errors, and to credit properly the contributions of others;
8. to treat fairly all persons and to not engage in acts of discrimination based on race, religion, gender, disability, age, national origin, sexual orientation, gender identity, or gender expression;
9. to avoid injuring others, their property, reputation, or employment by false or malicious action;
10. to assist colleagues and co-workers in their professional development and to support them in following this code of ethics.

http://www.ieee.org/about/corporate/governance/p7-8.html

(Evolving) Codes of Ethics in Other Technical Areas: Artificial Intelligence Code of Ethics

OREN ETZIONI

Sept. 1, 2017 https://www.nytimes.com/2017/09/01/opinion/artificial-intelligence-regulations-rules.html

Evolving from Isaac Asimov's laws of robotics:

1. "An A.I. system must be subject to the full gamut of laws that apply to its human operator. "
2. "An A.I. system must clearly disclose that it is not human."
3. "An A.I. system cannot retain or disclose confidential information without explicit approval from the source of that information."

Partnership on AI: Tenets

https://www.partnershiponai.org/tenets/

"We believe that artificial intelligence technologies hold great promise for raising the quality of people's lives and can be leveraged to help humanity address important global challenges such as climate change, food, inequality, health, and education.

The Partnership on AI shares the following tenets:

1. We will seek to ensure that AI technologies benefit and empower as many people as possible. …
2. We will educate and listen to the public and actively engage stakeholders to seek their feedback on our focus, inform them of our work, and address their questions.
3. We are committed to open research and dialogue on the ethical, social, economic, and legal implications of AI." …

Some ethical expectations may change with time,
some may be judged in hindsight with
expectations that evolved later,
some may border on the gray area.
We will avoid these possibilities today.

Often, “when there is smoke, there is also fire.”

But, sometimes people rush to judgment with little substantive evidence.

Some may be judged improperly and falsely accused of being unethical.
Things may not always be what they seem to be.

Research and Research Papers

Should be *Original*: New findings, insights of potential impact

Must be *Correct* to the best of your knowledge with **no data fabrication, data falsification, or plagiarism** (with good controls; following proper procedures; careful, thorough) **Sometimes-used limited-view of Responsible Conduct of Research**

Must be *Reproducible* (ability to reproduce exactly, and build on the results)

Should be *Well Written*

Cite previous work and methods that are relevant and **that you used**

Present all relevant data and results, all of which must have been obtained legitimately (no falsification, fabrication, removing outliers, "cherry picking")

Author list must be "proper," authors must approve of the submitted paper; can also acknowledge those of 'lesser contribution'

It is plagiarism if you copy anything (including introductory material or framework) from another paper (must cite; can quote in quote marks—but extensive quoting makes for a bad paper)

Cannot submit same work for publication to more than one journal

Research and Research Papers

Should they inform or persuade?

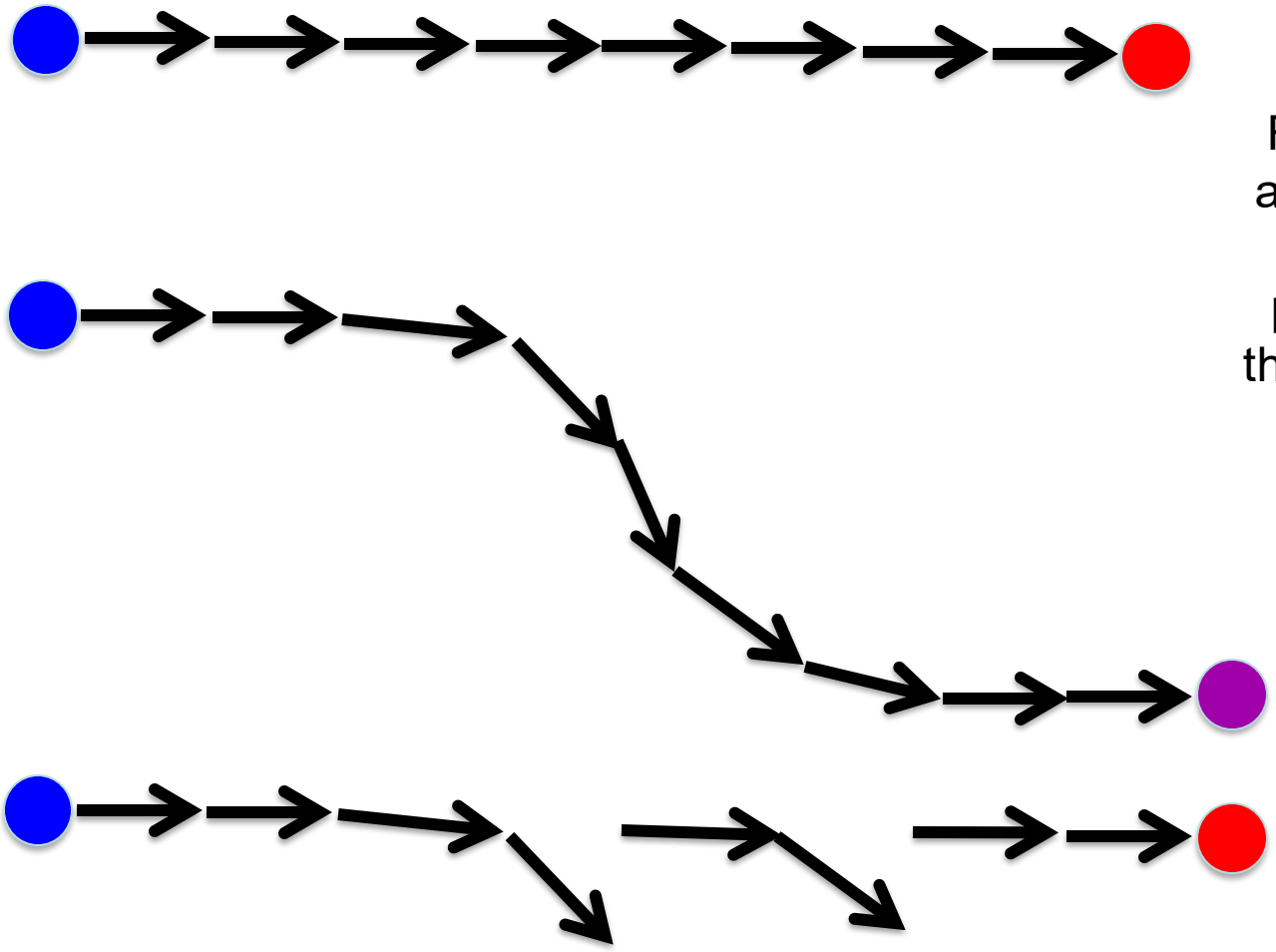
Is there a spectrum?

	Informing	Persuading
Measure of success	Comprehension	Change in behavior or attitude
Focus of communication	Balanced evidence	Take-home message
Aim	Audience to understand the information	Audience to believe the information

Reproduced from the below citation

A. Freeman, Should scientific papers inform or persuade? February 6, 2023 PLOS Biology PLOS Biology Publishing Science communication https://biologue.plos.org/2023/02/06/should-scientific-papers-inform-or-persuade/

Research Plan

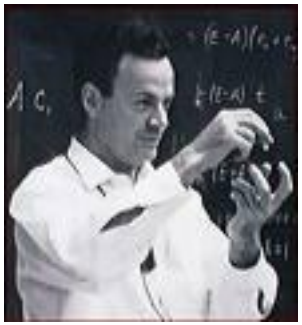


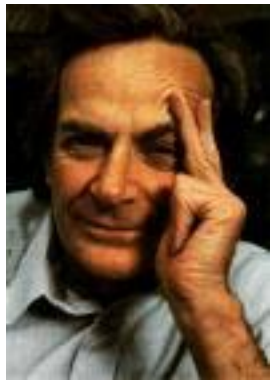
When should you stick to this unchanging plan?

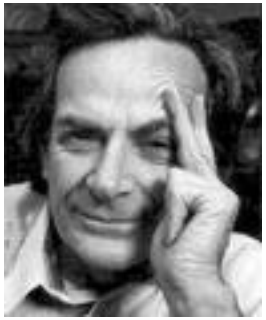
For hardcore engineering and medical (translational) testing of products/procedures, but there even even exceptions here.

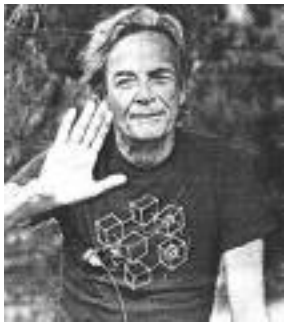
Common course of research.

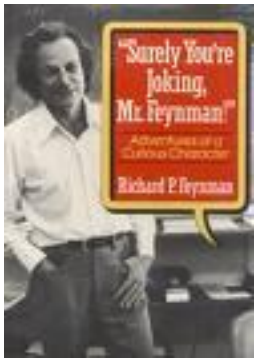
Fudging data/unethical research.



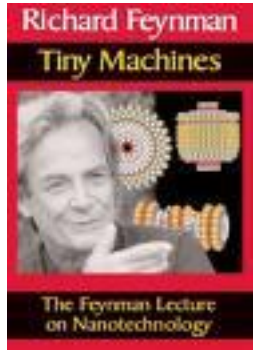







"Surely You're Joking, Mr. Feynman!"
Richard P. Feynman


RICHARD FEYNMAN
Tiny Machines


Richard Feynman
Tiny Machines
The Feynman Lecture on Nanotechnology

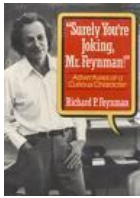
From the book: Surely You're Joking, Mr. Feynman!, by Richard Feynman

…For example, **if you're doing an experiment, you should report everything that you think might make it invalid--not only what you think is right about it:** other causes that could possibly explain your results; and things you thought of that you've eliminated by some other experiment, and how they worked--to make sure the other fellow can tell they have been eliminated.

Details that could throw doubt on your interpretation must be given, if you know them. You must do the best you can--if you know anything at all wrong, or possibly wrong--to explain it. **If you make a theory, for example, and advertise it, or put it out, then you must also put down all the facts that disagree with it, as well as those that agree with it.** …

We've learned from experience that the truth will come out. Other experimenters will repeat your experiment and find out whether you were wrong or right. Nature's phenomena will agree or they'll disagree with your theory. **And, although you may gain some temporary fame and excitement, you will not gain a good reputation as a scientist if you haven't tried to be very careful in this kind of work.**

In summary, the idea is to **give all of the information to help others to judge the value of your contribution; not just the information that leads to judgement in one particular direction or another.**



A selected history of expectation bias in physics

M. Jeng , A, J. Phys. 74, 578-583 (2006)--and references cited therein

- Expectation Bias

- Usually not fraud. Could be recklessness. Sometimes merely unintentional, and not purposely reckless or biased.

Examples

Not recording findings contrary to expectations (perhaps Newton not noticing spectral lines)

Seeing something because of expectations (widespread observations of N-rays, early 1900s)

Recording observations to favor observations (psychological experiments)

Not performing "blind" analysis of data (Fairbanks search for quarks)

Not checking for errors in calculations and models and not improving them when agreement with experiment or expectations first seems fine

A selected history of expectation bias in physics

M. Jeng , A, J. Phys. 74, 578-583 (2006)--and references cited therein

More Examples

Ceasing experiments when expected results are attained (perhaps in Mendel's experiments in heredity in peas)

Not pursuing all possible contributions to and causes of observations (bubble fusion)

Correction for systematic errors in a biased way (bandwagon effect, g factor of electrons)

Throwing out data when they disagree with expectations (not only when equipment is clearly malfunctioning) (Millikan oil drop experiment)

In contrast:

Maxwell persevered with his billiard ball model of gases, despite the disagreement of his model predictions of viscosity at low density with the then (incorrect) analysis of experimental observations

The Times They are a Changing
Evolving Ethical Situations

Bob Dylan (MICHAEL OCHS ARCHIVES/GETTY)

Using ChatGPT and the like

- A scientist is very, very busy and wonders if it would be proper to use some AI tool, such as ChatGPT, to write up his new research publication (or proposal), or at least a draft of it. What should he/she do?

- A student is asked by his professor to scientist to write a draft of a paper concerning their research and wonders if it would be proper to use some AI tool, such as ChatGPT, because it would be easier to do so and, any case, he is not experienced in writing articles.. What should he/she do?

- A scientist wonders if it would be proper to use some AI tool, such as ChatGPT, to write up her new research proposal, or at least a draft of it. What should he/she do?

- A job applicant wonders if it would be proper to use some AI tool, such as ChatGPT, to write up his job application. What should he/she do?

The Times They are a Changing
Evolving Ethical Situations

Bob Dylan (MICHAEL OCHS ARCHIVES/GETTY)

Being Safe: Staying Awake in the Lab

A student has often heard his/her advisor say that no one in your group should work in the lab when they are tired, because accidents are then much more likely, and wants all to wear new head gear that can monitor brain activity to warn him/her when you are fatigued and too tired to be in the lab, but you have heard that it monitors your focus and who knows what else. What should he/she do?

When Your Boss Is Tracking Your Brain Bioethicist Nita Farahany says privacy law hasn't kept up with science as employers increasingly use neurotechnology in the workplace

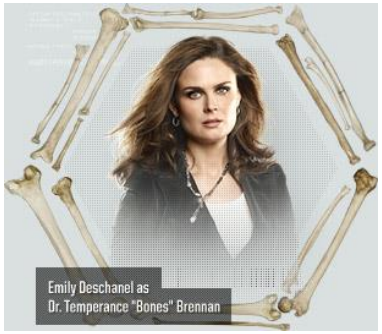
By Amy Dockser Marcus Feb. 15, 2023 8:56 am ET

https://www.wsj.com/articles/brain-wave-tracking-privacy-b1bac329

TV Show Episode Plots That Address Professional Ethics Lapses

Leave it to Beaver (1958)
plagiarism

House (2006)
publication ethics



Bones (2012)
conflict of interest

Death in Paradise (2013)
authorship, plagiarism

Bones - Season 7, Episode 9 (Review): The Don't in the 'Do

http://www.poweredbyosteons.org/2012/04/bones-season-7-episode-9-review.html

Brennan reveals that she was one of the peer reviewers. (Advisors and other supervisors generally don't review their students' papers unless there's a really good reason to do so. Brennan's reviewing it would be considered a conflict of interest by most journal editors.)

Bones is ethical to a fault.

What was she thinking?

http://www.fox.com/bones/

Bones - Season 7, Episode 9 (Review): The Don't in the 'Do

http://www.poweredbyosteons.org/2012/04/bones-season-7-episode-9-review.html

And finally, as portrayed in Bones, this is NOT how academic publishing works:

- Vizidi gets galley proofs for his Journal of Forensic Anthropology article. (Galley proofs are electronic, not printed.)
- He's not allowed to tell anyone about the article acceptance until the journal comes out. (Articles are published online after peer-review as early view. In some journals, articles are published even before copyediting, or immediately after acceptance. No one is ever surprised by the contents of a published journal volume.)
- Vizidi excitedly shows Hodgins a footnote citing one of his papers. Hodgins is excited. (Most anthro journals don't use footnotes, they use parenthetical references. The footnote to Hodgins is incomplete. And if Hodgins is as much a bad-ass as he claims, another citation to his work wouldn't even make a dent in his h-index.)
* **- Brennan reveals that she was one of the peer reviewers**. (Advisors and other supervisors generally don't review their students' papers unless there's a really good reason to do so. Brennan's reviewing it would be considered a conflict of interest by most journal editors.)
- In the end, Vizidi's paper is not published. (Journals don't retract papers except in the case of data mismanagement or other ethical violations.)
- Instead of Vizidi's paper, the Journal of Forensic Anthropology plans to run a puff piece on Selena Gomez on a fossil hunt. (Peer-reviewed journals don't run "puff" pieces. And even if they did, an article on a fossil hunt is completely inappropriate for a forensic journal. But now my life's goal is to get AJPA to publish pictures of me and The Biebs riding a dinosaur at the Creation Museum.)
- Brennan thinks that Vizidi is too immature to understand what "being published" means. (Anthropology graduate students routinely come out of school with 3 or more publications these days. Vizidi is pretty far behind if this is his first article. Also, "being published" means just that - you've told other people about something you did, and a few people agreed with you that it was neato keen. It's not the end all be all.)
- Oh, right, and Vizidi's awesome article? "New Methodologies for Osteometric Analysis in Human Remains." (Because what we need is another article to tell us how to measure the length of a bone?) His follow-up? The hilariously non-specific, "Advances in Forensic Odontology."

Death in Paradise (2013)

Season 2, Episode 7, #15 overall,
"A Stormy Occurrence", February 19, 2013

A meteorologist dies during a hurricane, and three other team research scientists and the team leader, the professor, who is about to publish a major book in the field, are suspects, in what is found to be murder.

Was the murder motivated by wanting to be the second author on the paper, which is that of the highest respect, after the first author, the professor?
Maybe not a compelling enough reason for murder.

Was it motivated by the professor's interests in money and research funds?
He proclaimed: "I am a man of science, inspector, not a corporate shill."

The career of the professor has suddenly bloomed because he took credit for the brilliance of the murdered junior scientist, without sharing. In fact, he was publishing the murdered scientist's work as his own book. The murder victim was about to tell the dean the truth about the professor.
The inspector exclaimed: "Plagiarism is abuse, Professor." after declaring that the professor was "a plagiarist and a murderer."
(Wasn't this really intellectual theft and not strictly plagiarism?)

Analyzing Data – Why Doesn't He/She Trust Me?

A graduate student is angry with his/her advisor because his/her advisor said that all of the data he/she took the previous 6 months doesn't count because they were not documented in a lab book. What should he/she do?

Why the Interest in Seeing the Raw Data?

To see if good records are being kept (**lab book**, etc.)

To understand the nature of the data (signal/noise, …)

To help analyze it (look for trends)

To look for honest mistakes, misinterpretations

To make what is presented is quantitatively accurate ("just the facts"), and displayed data and conclusions are logical and not interpreted by what one would hope to see

To make sure that there is no reckless sloppiness in obtaining the data

To make sure that the data have not been "massaged", cherry-picked, smoothed, and outliers have not been inappropriately removed

To see if anything is "unusual" (fabricated, Schoen)

miraclesone.org

Jan Hendrik Schön; Plastic Fantastic

Plastic Fantastic: How the Biggest Fraud in Physics Shook the Scientific World, Eugenie Samuel Reich (Macmillan Science) 2009

Jan Hendrik Schön

Jan Hendrik Schön; Plastic Fantastic

Booklist (review journal of the American Library Association):
At Bell Labs in the late 1990s, Schön's apparent discoveries about atomic-scale devices called field-effect transistors earned him a stellar peer-group reputation—**until his research was exposed as faked in 2002.**

While science's self-correcting mechanism did dissolve Schön's deceptions, its failure to catch the frauds sooner motivates Reich's tenacious pursuit of the story.

Along with failures in the peer-review process of journals like Science and Nature, which published some of Schön's papers, Reich found a propensity within Bell Labs to believe Schön's results, which, had they been real, could have commercially benefited the home of the original, macroscale transistor.

Another crucial factor that Reich develops was **Schön's ability to allay tough questions with revised data, though when he began to manipulate and outright invent data remains mysterious**, for on that he eluded Reich, too.. –Gilbert (excerpted)

What is Plagiarism?

The following is directly from http://www.plagiarism.org/plagiarism-101/what-is-plagiarism/

ALL OF THE FOLLOWING ARE CONSIDERED PLAGIARISM:

- turning in someone else's work as your own
- copying words or ideas from someone else without giving credit
- failing to put a quotation in quotation marks
- giving incorrect information about the source of a quotation
- changing words but copying the sentence structure of a source without giving credit
- copying so many words or ideas from a source that it makes up the majority (or much) of your work, whether you give credit or not

Plagiarism?

Applied Physics Letters **404**, 3100 (1999)

Photoluminescence in CdSe Quantum Dots

by G. N. Jones

…….

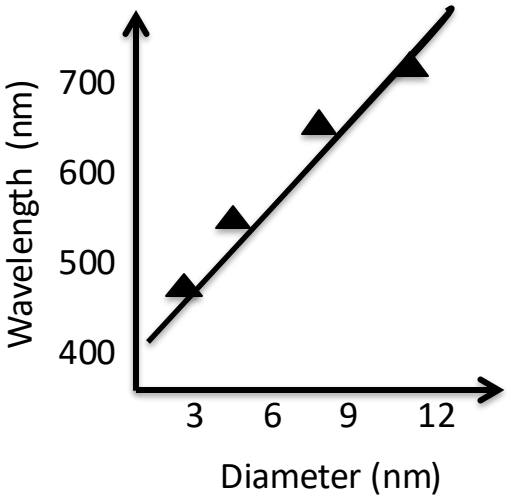
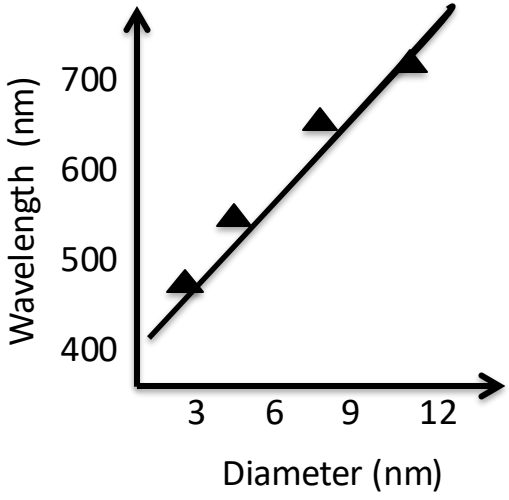


Fig. 2. The photoluminescence of CdSe quantum dots as a function of size.

…….

Your journal publication



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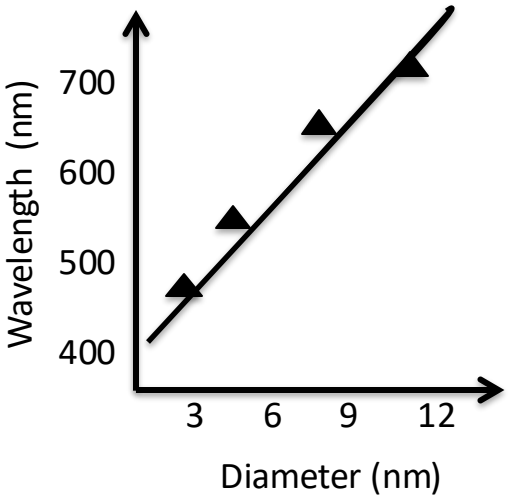

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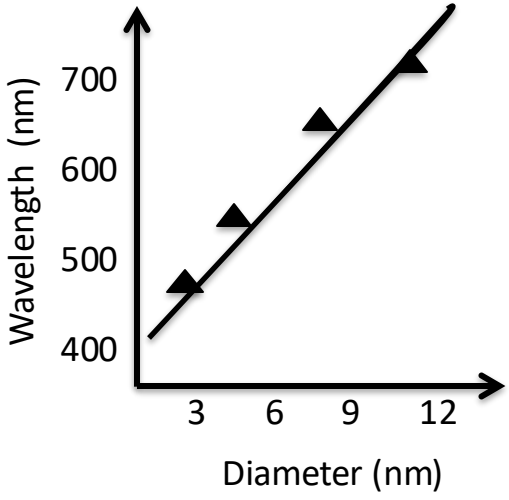
Your journal publication



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References

12. G. N. Jones, APL 404, 3100 (1999)

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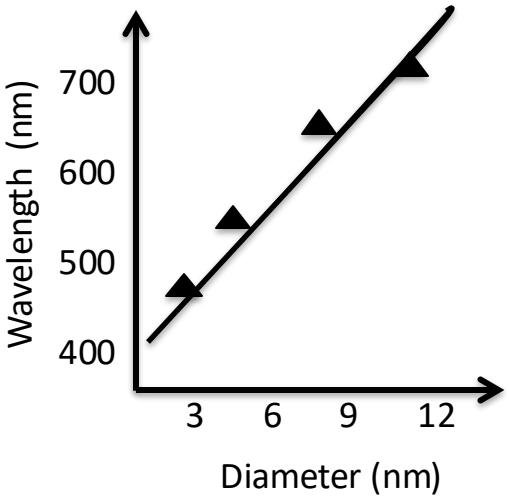

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Your journal publication

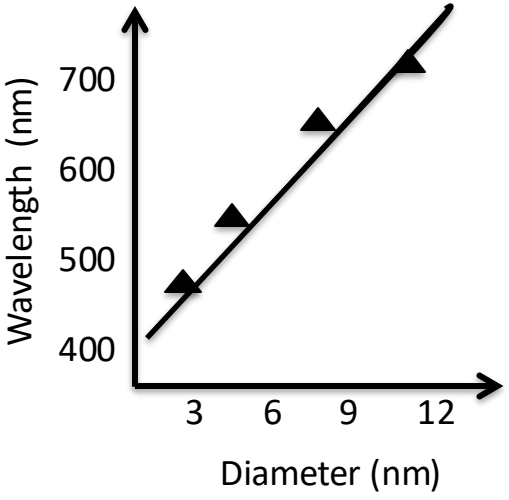

Fig. 8. The photoluminescence of CdSe quantum dots as a function of size.[12] (Used with the permission of the author and publisher.)

References

12. G. N. Jones, APL 404, 3100 (1999)

Plagiarism?

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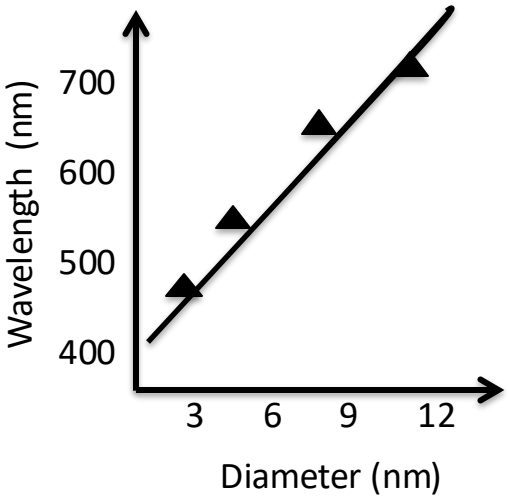

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…….

Your journal publication

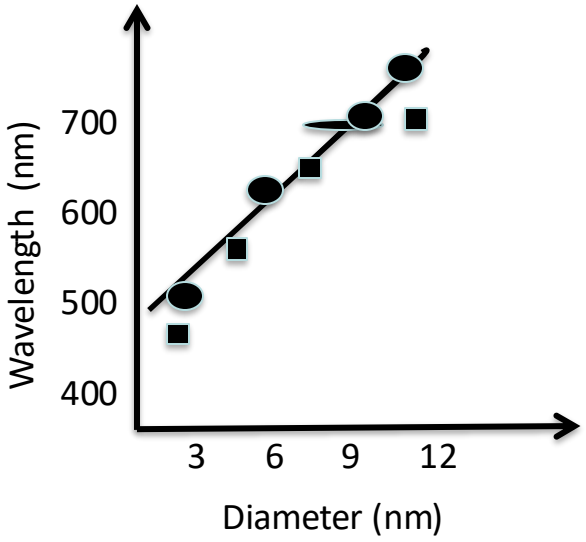


Fig. 8. Comparison of the photoluminescence of CdSe quantum dots in our experiment (ovals) and theory with the data of Ref. 12 (squares), as a function of size.

References

12. G. N. Jones, APL 404, 3100 (1999)

Tenured Professor Fired over Plagiarism

Columbia Professor ... Is Fired on Plagiarism Charges

By MARC SANTORA Published: **June 24, 2008**, New York Times

http://www.nytimes.com/2008/06/24/nyregion/24columbia.html

Interactions with students are a bit different in science and engineering.

"We are terminating Madonna Constantine's employment with Teachers College for cause ..." The investigation into the plagiarism charges was conducted by the law firm Hughes Hubbard & Reed, which found "numerous instances in which she used others' work without attribution in papers she published in academic journals over the past five years," according to a statement from Teachers College.

Columbia Fires ... Professor for Plagiarism

A law firm hired by Teachers College concluded that Madonna Constantine had lifted the work of others By Graham Rayman, Tuesday, **June 17th 2008** The Village Voice

http://www.villagevoice.com/2008-06-17/news/columbia-fires-madonna-constantine/

In a move that surprised even college insiders, Columbia Teachers College has fired controversial professor Madonna Constantine, the *Voice* has learned. Constantine, a prominent member of the counseling psychology department, … **was accused of repeated plagiarism by a former colleague and two former students**. In a letter issued today, college officials say they were accepting the findings of an outside law firm, which concluded Constantine had lifted work from her accusers. They also concluded that Constantine acted to obstruct the investigation. The outside law firm concluded that Constantine, who had been with the college since 1998, **had lifted some 36 passages from the work of former TC professor Christine Yeh, and former students Tracey Juliao and Karen Cort**. "It's kind of unprecedented to fire a tenured professor," a college insider says. The people who leveled the plagiarism charges said justice had been served.

Whistleblowing

One scientist suspects another scientist of research misconduct and wonders whether he/she should be a whistleblower and contact the government agency funding the work of the other scientist. What should he/she do?

What is the threshold of how bad the problem (false dissemination, fraud, danger, …) is to report it?

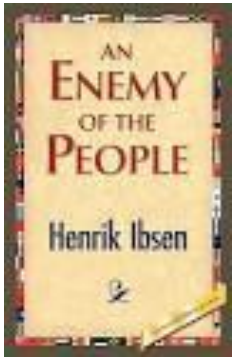
How sure should the prospective whistleblower be that he/she is right?

Should should prospective whistleblower be concerned with potential damage to himself/herself?

Should prospective whistleblower be concerned with the permanent damage to the reputation of people/scientists if his/her charge is false (or false for one of the authors)?

- "Clearing" of David Baltimore exception, after long time & great cost

More journals are asking authors to list what each author, not only for giving credit, but to shield authors from fraud they did no participate in.



1882 play

1978 movie

Wikipedia

Former CU Ph.D student found guilty of 21 instances of misconduct

By Michael Zhong, Columbia Spectator, December 2, 2010

After a five-year investigation, the U.S. Office of Research Integrity has found 21 instances of **scientific misconduct in the doctoral work of Bengu Sezen, a former Ph.D. student in the Columbia chemistry department.**

The ORI report, which was released on Monday, found that **Sezen committed multiple ethical violations in her doctoral research at Columbia** on carbon-hydrogen bond activation.

Along with the report, the ORI banned Sezen from working for any U.S. government agency or holding any advisory position with the U.S. Public Health Service Commissioned Corps for five years.

In 2005, Sezen's doctoral adviser, **Dalibor Sames**—now an associate chemistry professor—made waves in the scientific community **when he retracted seven articles authored by Sezen *because other members of Sames' laboratory group were unable to replicate Sezen's results*.**

Shortly thereafter, **Columbia launched an investigation** independent of the ORI's and determined in 2006 that **Sezen had fabricated data and plagiarized parts of her papers**.

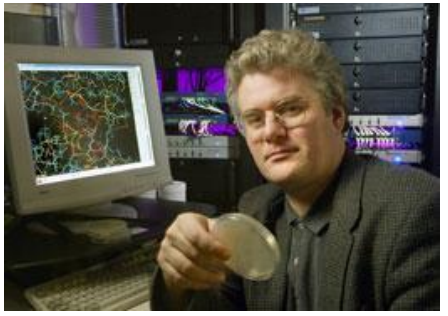
"The official finding of the federal Office of Research Integrity at the Department of Health and Human Services has affirmed Columbia's investigation of research misconduct in this matter. **The University is in the process of requesting the Trustees to formally revoke Ms. Sezen's Ph.D,"** University spokesperson Robert Hornsby said in a statement.

Sloppy Work, Being First, Accusations, Hearings, Mentoring, …

Chemistry: Designer debacle

A high-profile scientist, a graduate student and two major retractions. Erika Check Hayden reports on a case that has rocked the chemistry community.

Nature, Published online **9 May 2008** | **453**, 275-278 (2008)
http://www.nature.com/news/2008/080514/full/453275a.html



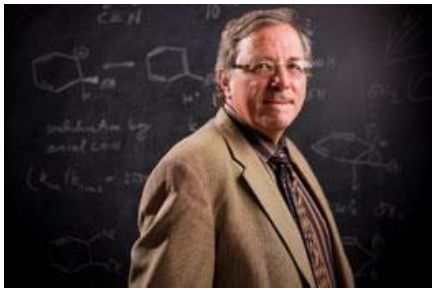
Homme Hellinga is well known for his work in designing enzymes. *L. TODD/DUKE PHOTOGRAPHY*

Excerpts:

"By early 2004, **Hellinga was ready to publish.** On 29 March, he submitted a paper describing the NovoTIMs to Science, which accepted it on 6 May. **The paper did not mention the variability Dwyer had noticed. It included only her best data and claimed victory.** "We have successfully converted a protein devoid of catalytic activity into a triose phosphate isomerase, using computational design techniques," it stated."

"Dwyer says that she raised her concerns with Hellinga at the time. But Hellinga says he does not feel he pushed Dwyer or anyone else to publish prematurely. "These things were talked through very carefully with all the people involved," he says."

"By last July, **the Buffalo group was convinced that something had gone wrong with Hellinga's experiments.** By using step purification, they felt, Hellinga's lab had failed to separate the NovoTIMs from the TIMs found naturally in E. coli."



John Richard flagged issues with potential contamination. *D. LEVERE, UNIV. BUFFALO*

Chemistry: Designer debacle (continued)

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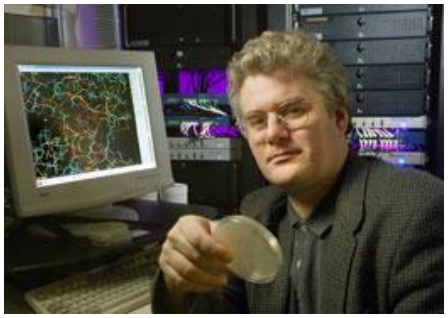
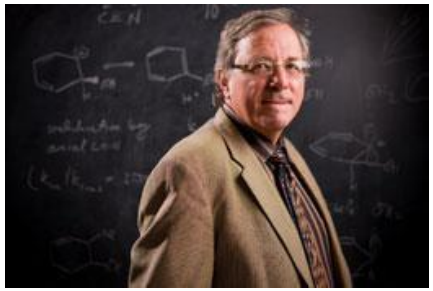


Homme Hellinga is well known for his work in designing enzymes. *L. TODD/DUKE PHOTOGRAPHY*

"On 8 October, **Hellinga wrote to Richard**. "We have completed our repeat experiments on NovoTIM," he wrote. "**I concur with your finding** that the NovoTIM designs do not exhibit enzymatic activity, and that the reported activity is due to a contaminating activity which is very likely to be the endogenous, wild-type triose phosphate isomerase." The repeat negative control experiments, Hellinga wrote, had found "TIM activity in the wild-type [ribose-binding protein] preparations prepared by the step gradient elution method.""

Throwing a student "under the bus"



John Richard flagged issues with potential contamination. *D. LEVERE, UNIV. BUFFALO*

"And that's when Hellinga dropped the bombshell. "He said, 'I find it really hard to believe that you didn't make this up', and he kept saying that kind of statement over and over again," Dwyer says. "It was horrible.""

"A committee on research misconduct convened a formal inquiry hearing in December, at which Dwyer was asked to address the claims against her. On 4 February, she received a letter from Wesley Byerly, an associate dean in the medical school, **clearing her of the allegation of falsifying and fabricating results."**

"both the Science and Journal of Molecular Biology papers were formally retracted."

Science Needs a Solution for the Temptation of Positive Results

Aaron E. Carroll MAY 29, 2017
https://www.nytimes.com/2017/05/29/upshot/science-needs-a-solution-for-the-temptation-of-positive-results.html

"A few years back, scientists at the biotechnology company Amgen set out to replicate 53 landmark studies that argued for new approaches to treat cancers using both existing and new molecules. They were able to replicate the findings of the original research only 11 percent of the time. Science has a reproducibility problem. And the ramifications are widespread.

There are a number of reasons for this crisis. Scientists themselves are somewhat at fault. Research is hard, and rarely perfect. …

The research environment, and its incentives, compound the problem. Academics are rewarded professionally when they publish in a high-profile journal. Those journals are more likely to publish new and exciting work. That's what funders want as well. This means there is an incentive, barely hidden, to achieve new and exciting results in experiments.

Some researchers may be tempted to make sure that they achieve "new and exciting results." This is fraud. As much as we want to believe it never happens, it does. …

But fraud is rare. What happens far more often is much more subtle. Scientists are more likely to try to publish positive results than negative ones. They are driven to conduct experiments in such a way as to make it more likely to achieve positive results. They sometimes measure many outcomes and report only the ones that showed bigger results."

Bounties for Publishing in High Impact Journals – Explicit and Implicit Effects

Cash bonuses for peer-reviewed papers go global By Alison Abritis, Alison McCook, Retraction Watch Aug. 10, 2017
http://www.sciencemag.org/news/2017/08/cash-bonuses-peer-reviewed-papers-go-global
Publish or impoverish: An investigation of the monetary reward system of science in China (1999-2016)
Wei Quan, Bikun Chen, and Fei Shuhttps://arxiv.org/ftp/arxiv/papers/1707/1707.01162.pdf

- Explicit: “A recent analysis posted to arXiv showed that, on average, Chinese universities offer first authors more than $43,000 for publishing a paper in Science or Nature, with the top reward for such a paper reaching a knee-wobbling $165,000. In most cases in China, cash incentives are paid to the first author.”

- Explicit: Also in a few U.S. schools

- Implicit: Getting jobs, promotions, high salaries, …

A Professor with Several Students Doing Research on One Project

A professor is running a group in which several, say 5, students are working on essentially one project and each wants to be first author when the paper reporting this work is published.

The professor decides to satisfy them by publishing 5 papers that are essentially the same, with one of the students as first author on each. Each paper has a minor tweak in it that highlights the work of the first author for that paper.

1. Is this proper?

2. Is this plagiarism?

3. A journal editor notices that 5 manuscripts submitted to his/her journal and to other journals are essentially the same, with essentially (aside from minor differences) and the same author list but with different first authors. What should he/she do?

4. How can this entire situation be corrected?

How Many Scientists Does It Take to Write a Paper? Apparently, Thousands

By ROBERT LEE HOTZ Aug. 9, 2015 9:13 p.m. ET WSJ 8/9/15; 8/10/15 print
http://www.wsj.com/articles/how-many-scientists-does-it-take-to-write-a-paper-apparently-thousands-1439169200

Who is a Legitimate Author, What is the Author Order, and Are These Jokes? Part I

- **"… there has been a notable spike since 2009 in the number of technical reports whose author counts exceeded 1,000 people**…In the ever-expanding universe of credit where credit is apparently due, the practice has become so widespread that some scientists now joke that they measure their collaborators in bulk—by the "kilo-author.""
- ""**There was a joke that anyone who had ever seen a fruit fly got to be an author,"** said neuroethologist Zen Faulkes at the University of Texas Rio Grande Valley …."
- "Usually, the position of first author confers the most prestige, identifying the person who contributes the most to a research enterprise. The last author is usually the senior scientist who oversees the experiment. The co-authors of a 1974 paper in the Journal of Animal Ecology **ranked themselves by playing a croquet tournament**, according to a footnote. The authors of a 1998 paper in the journal Molecular Ecology **arranged the order of co-authors "by proximity to tenure decisions**," according to their acknowledgments."

How Many Scientists Does It Take to Write a Paper? Apparently, Thousands

By ROBERT LEE HOTZ Aug. 9, 2015 9:13 p.m. ET WSJ 8/9/15; 8/10/15 print
http://www.wsj.com/articles/how-many-scientists-does-it-take-to-write-a-paper-apparently-thousands-1439169200

Who is a Legitimate Author, What is the Author Order, and Are These Jokes? Part II

- "Michigan State University mathematician Jack Hetherington published a paper in 1975 on low temperature physics in Physical Review Letters with F.D.C. Willard. His colleagues only discovered that **his co-author was a siamese cat** several years later when Dr. Hetherington started handing out copies of the paper signed with a paw print."
- "… Shalosh B. Ekhad at Rutgers University so far has published 32 … papers … with his co-author Doron Zeilberger. … Shalosh B. Ekhad is Hebrew for **the model number of a personal computer** used by Dr. Zeilberger (who said) "The computer helps so much and so often"" ."
- "Immunologist Polly Matzinger at the National Institute of Allergy and Infectious Diseases **named her dog**, Galadriel Mirkwood, as a co-author on a paper she submitted to the Journal of Experimental Medicine. "What amazed me was that the paper went through the entire editorial process and nobody noticed," Dr. Matzinger said. When the journal editor realized he had published work crediting an Afghan hound, he was furious, she recalled."
- "… Sir Andre Geim, winner of the 2010 Nobel Prize in Physics, credited H.A.M.S. ter Tisha as his co-author of a 2001 paper published in … Physica B. Those journal editors didn't bat an eye when **his co-author was unmasked as a pet hamster**. "Not a harmful joke," said Physica editor Reyer Jochemsen at the Leiden University in the Netherlands. "Physicists apparently, even journal editors, have a better sense of humor than the life sciences," said Dr. Geim ..."

Proposal Writing

A professor writing a proposal with a colleague later learns that he/she submitted the proposal they jointly wrote by him/herself without including him/her. What should he/she do?

A professor writing a proposal with a colleague later learns that he/she submitted the proposal they jointly wrote by him/herself without including him/her, and later is told by the colleague that his/her exclusion did not matter anyway because the proposal was not funded. What should he/she do?

A professor writing a proposal with a colleague later learns that he/she submitted the proposal they jointly wrote by him/herself without including him/her, and later learns the proposal was funded. What should he/she do?

Direction of Research

A graduate student, told by his/her professor that he/she needs to modify the direction of his/her thesis research some because his research assistantship is now supported in part by a new second grant, is upset that his research plans are being altered because of money considerations and not by where the results take him/her. What should he/she do?

Reporting Your Results and Collaborations

A researcher notices that adding a trace amount of an element to a material (or process) makes it fantastically better and a potential financial bonanza, and wants to publish the results but is afraid that others will be able to reap benefits from this finding better and faster than he/she can if all is disclosed. What should he/she do?

A researcher notices that adding a trace amount of an element to a material (or process) makes it fantastically better and a potential financial bonanza, and wants to file a patent on it, but is afraid that others may still effectively "steal" the results. What should he/she do?

A researcher notices that adding a trace amount of an element to a material (or process) makes it fantastically better and a potential financial bonanza, and wants to hide the results from all and go into business by him/herself, but wonders if this is right. What should he/she do?

A researcher notices that adding a trace amount of an element to a material (or process) makes it fantastically better and a potential financial bonanza, and wants to hide the results from his/her collaborators. What should he/she do?

Intellectual Property

A graduate student and his/her professor have a brainstorming sessions and come up with several good ideas for research, and the student later learns that his/her professor has filed for a patent for these ideas without consulting him/her or including him/her as an inventor. What should he/she do?

Intellectual Property and Publications

A graduate student and three others are working a project, that closely relates to potentially exciting intellectual property/patent that two of these others (justly own), and wonders how to deal with those two because they are pushing for rapid publication of results that he/she thinks are far too preliminary. What should he/she do?

What are the Limits to Confidentiality:
Another World: Human Genetics

- **Is it ethical to disclose the problems of a patient (genetics or transmittable disease) to others?**
  - If the patient won't permit disclosure
  - If the harm is big
  - If at-risk relatives are identifiable
  - If the disease can be prevented or treated

The American Society of Human Genetics says yes

Trust in Collaborations/Seeing the Raw Data

Scientist A is collaborating with equally prominent Scientist B, and feels awkward asking to see the raw data taken by Scientist B even though he/she thinks it is important to make sure his/her collaborators are being scientifically responsible. What should he/she do?

After establishing a collaboration with equally prominent Scientist B, Scientist A hears that there might be something amiss with the scientific ethics of his/her collaborator---perhaps related to fraudulent, exaggerated, or massaged data---and wonders how to (or even if to) approach Scientist B about this. What should he/she do?

Bios and CVs

A professor notes that an adjunct professor states on his LinkedIn site that he/she earned his doctorate in the professor's department, but he/she knows this is not true. What should he/she do?

The department chair of this professor wonders whether this may be a simple mistake because he knows that this adjunct professor had listed his doctorate as being from a non-U.S. university in his CV, and then learns that that university does not offer doctorates. What should he/she do?

Funding Agency Review of Proposals

A funding agency officer wonders whether it would be proper to choose reviewers who are known to grade proposals more generously to examine the proposals he likes and reviewers who are known to grade proposals more harshly to examine the proposals he does not like. What should he/she do?

A funding agency is conducting a series of parallel review panels to evaluate submitted proposals (in which only a very small fraction of proposals reviewed in each will be funded) and wonders whether it would be correct to include all of a given university's proposals in one panel, to help prevent that university from hogging all of the funding. What should he/she do?

Publication Issues

A scientist and his/her colleague cannot agree how to publish their joint results, and later the scientist learns that the colleague has published their work, without consulting him/her, and has included him/her as an author. What should he/she do?

A professor notices the on-line publication of a paper by a former student (with the professor listed as an author), but was never even informed by the student that a paper was being prepared or submitted. What should he/she do?

A professor learns that a recently graduated student (now a postdoc elsewhere), who is upset with him/her, refuses to let any more of his/her thesis be published in journals (which the professor must do to justify the funding that supported that student and future students) and also claims rights to all in the thesis because he/she copyrighted the thesis. What should he/she do?

Reviewing Manuscripts

A scientist is asked to review a manuscript submitted for publication that is very similar to one he/she has just submitted (but clearly involves independent work). What should he/she do?

A scientist is asked to review a manuscript submitted for publication that is very similar to one he/she is just about to submit (but clearly involves independent work). What should he/she do?

Joining Two Competing Proposals

A professor is invited to serve on two competing proposal efforts and wants to join both and wonders if this is proper. What should he/she do?

A professor is invited to serve on two competing proposal efforts, joins both, and wonders if it would be proper to leave one just before submission knowing it would help the one he/she will remain on and hurt the other effort. What should he/she do?

References: Whom Do You Cite?

A student is writing a paper describing the use of a laser to make a measurement, and wonders whether adding a reference to demonstration of the first laser or of the first laser of this type is needed. What should he/she do?

A scientist wonders whether it would be proper to add relevant references to work done by several researchers, who would be likely reviewers, along with those to the dominant papers in the field, and wonders whether this is proper. What should he/she do?

Citations

A graduate student from a big group realizes that success in his/her career may be determined by how many times his papers are cited and wonders whether it would be proper for all his/her group colleagues to agree to always cite much of each others' work in all of their publications during their careers to boost their citations. What should he/she do?

Safety

A car manufacturer wants to sell a safety feature as an option. What should it do?

An airplane manufacturer wants to sell a safety feature as an option. What should it do?

A Sharp Rise in Retractions Prompts Calls for Reform

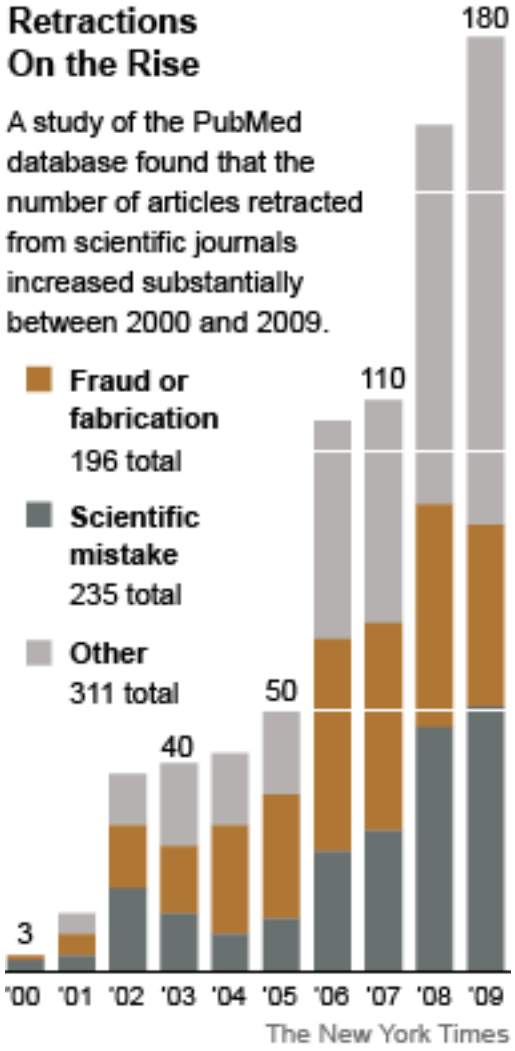
http://www.nytimes.com/2012/04/17/science/rise-in-scientific-journal-retractions-prompts-calls-for-reform.html

"No one claims that science was ever free of misconduct or bad research. Indeed, the scientific method itself is intended to overcome mistakes and misdeeds. When scientists make a new discovery, others review the research skeptically before it is published. And once it is, the scientific community can try to replicate the results to see if they hold up."

"But critics like Dr. Fang and Dr. Casadevall argue that science has changed in some worrying ways in recent decades …."

"Several factors are at play here, scientists say. One may be that because journals are now online, bad papers are simply reaching a wider audience, making it more likely that errors will be spotted. "You can sit at your laptop and pull a lot of different papers together," Dr. Fang said."

"But other forces are more pernicious. **To survive professionally, scientists feel the need to publish as many papers as possible, and to get them into high-profile journals. And sometimes they cut corners or even commit misconduct to get there.**"



Professional Decisions: Improving Your Results

A scientist applying for a job in industry wants to makes sure his/her resume puts him/her in the best possible light and wonders whether it would be okay to tweak his/her resume by listing his/her undergraduate minor as being materials science and engineering---which would make the application stronger, instead of what it was officially, materials science. What should he/she do?

Data Reproducibilty

A graduate student is told to reproduce the experiment done by a graduated student, as preliminary work for a more advanced experiment, and repeatedly cannot, and tells the professor, who then becomes very annoyed. What should he/she do? [Scientific reproducibility]

Faked Peer Reviews Prompt 64 Retractions

By Ewen Callaway, Nature, 18 August 2015
http://www.nature.com/news/faked-peer-reviews-prompt-64-retractions-1.18202

- "…'fake peer review' …The practice can occur when researchers submitting a paper for publication suggest reviewers, but supply contact details for them that actually route requests for review back to the researchers themselves."
- "The Springer investigation began in November 2014 after a journal editor-in-chief noticed irregularities in contact details for peer reviewers. These included e-mail addresses that the editor … suspected were bogus but were accompanied by the names of real researchers, "

Publishing: The Peer-review Scam

by Cat Ferguson, Adam Marcus & Ivan Oransky 26 November 2014
http://www.nature.com/news/publishing-the-peer-review-scam-1.16400

- " … the editor of *The Journal of Enzyme Inhibition and Medicinal Chemistry* was puzzled by the reviews for manuscripts by one author — Hyung-In Moon, a medicinal-plant researcher then at Dongguk University in Gyeongju, South Korea. The reviews themselves were not remarkable: mostly favourable, with some suggestions about how to improve the papers. What was unusual was how quickly they were completed — often within 24 hours. The turnaround was a little too fast, and Claudiu Supuran, the journal's editor-in-chief, started to become suspicious. In 2012, he confronted Moon, who readily admitted that the reviews had come in so quickly because he had written many of them himself."

Gaming the system:

"The author recommends reviewers who are strangely difficult to find online.
The author provides Gmail, Yahoo or other free e-mail addresses to contact suggested reviewers, rather than e-mail addresses from an academic institution.
Within hours of being requested, the reviews come back. They are glowing."
Security loopholes in the publisher software that permit fake e-mail accounts hacking passwords.

Lab Books
(analogs for theorists and modelers/simulators)

A professor learns that a student is keeping a very sloppy lab book (from which the nature of the experiments cannot be reconstructed) or no lab book at all, tells the student that keeping a complete lab book is essential, and the student responds, “Don’t worry, I remember it all.” What should he/she do?

A professor learns that a student is ripping pages out of his/her lab book. What should he/she do?

A student wants to take his/her lab book with him/her after graduation, but the professor objects to this. What should he/she do?

Retraction Dispute

A graduate student is angry because he/she has been told by his/her advisor that the analysis in the paper they just published is flawed and no longer supports the main claims of the paper, and he/she wants to officially retract it. What should he/she do?

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.

1. What obligations do the authors owe their professional colleagues to correct the published record?

2. How should their decisions be affected by how the model is being used by others?

3. What other options exist beyond publishing a formal correction?

NAS (2009) http://www.nap.edu/openbook.php?record_id=12192&page=14

Theory and Data

Just as he/she is about to publish a theory, a scientist learns that the data the theory was based on and which it predicts, were faked. What should he/she do?

A Commercial Opportunity?

"Shen was always interested in bioinformatics and decided to use some of his free time to write a program that others in his microbial genetics laboratory would find useful. Starting with a popular spreadsheet program on his university-provided computer, he wrote the program over the summer and posted it on his personal Web page as a bundle that combined the spreadsheet program and his own program. Over the next academic year, he improved his program several times based partly on the feedback he got from the people in his laboratory who were using it.

At national meetings, he discovered that researchers in other laboratories had begun to download and use his program package, and friends told him that they knew of researchers who were using it in industry. When the issue arose in a faculty meeting, Shen's faculty adviser told him that he should talk with the university's technology transfer office about commercializing it. "After all," his adviser said, "if you don't, a company will probably copy it and sell it and benefit from your hard work."

The director of the technology transfer office was much more concerned about another issue: the fact that Shen had been redistributing the spreadsheet in violation of its license. "You do have rights to what you created, but the company that sells this spreadsheet also has rights," he said. "We need to talk about this before we talk about commercialization."

1. What obligations does Shen have to the developer of the original spreadsheet program? To the university that provided the spreadsheet and computer?
2. What are the pros and cons of trying to commercialize a program that is based on another's product?
3. What conflicts and practical difficulties might Shen encounter if he tries to operate a business while working on his dissertation?"

NAS (2009) http://www.nap.edu/openbook.php?record_id=12192&page=42

Another World: Commonalities in Engineering/Industrial/Physical Science, Research, and Medical Ethics

- **Each is concerned with**
  - How People and Animals are Treated
  - The Public Trust
  - Evaluation of Cost Factors
  - The Choice of New vs. Standard Practices
  - Improper Shortcuts

Cheating on Homework

Bad Ethics, and it leads to Bad Performance

Phys. Rev. ST Physics Ed. Research 6, 010104 (2010)

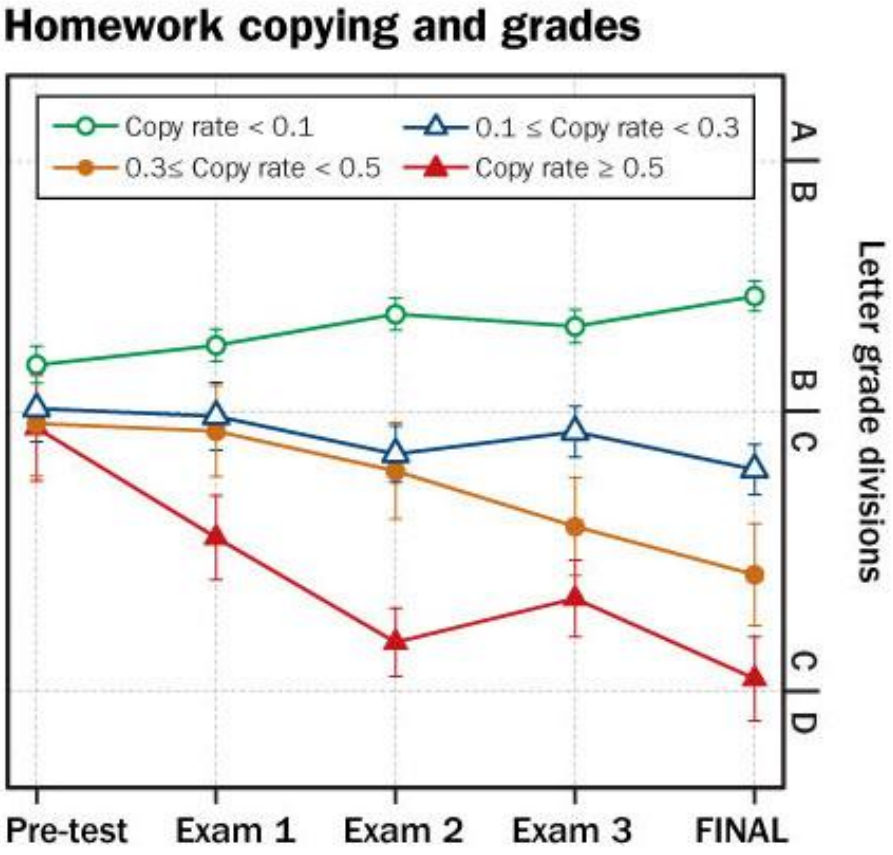
- MIT Introduction to Physics course

- On-line homework

- ~10% copied >50%
- ~10% copied 30-50%
- ~29% copied 10-30%
- ~51% copied <10%

- More copying, poorer grades

- Also, self-reported cheating survey cited that shows that the MIT students:
  - "report less overall cheating than students nationally"
  - "generally consider cheating to be more morally reprehensibile"



http://www.sciencenews.org/view/access/id/57665/title/Is_grade_copying_chart.jpg

From David J. Palazzo ET AL./PRST-PER 2010

Questionable Reimbursements

A professor learns that one of his/her graduate students applied for reimbursement for the exact same trip twice, and received funds both times. What should he/she do?

Loyalty

A graduate student suspects a fellow student is not recording data ethically and wonders whether he/she should tell their advisor about this, because it would be wrong to “rat” on a fellow student. What should he/she do?

A graduate student suspects a fellow student is always absent from the lab and wonders whether he/she should tell their advisor about this, because it would be wrong to “rat” on a fellow student. What should he/she do?

A graduate student suspects a fellow student is plagiarizing in his papers and thesis, and wonders whether he should tell their advisor about this, because it would be wrong to “rat” on a fellow student. What should he/she do?

A graduate student suspects a fellow student is breaking equipment in the lab and not reporting or fixing it, and wonders whether he/she should tell their advisor about this, because it would be wrong to “rat” on a fellow student. What should he/she do?

A graduate student suspects a fellow student is conducting experiments in an unsafe manner, and wonders whether he/she should tell their advisor about this, because it would be wrong to “rat” on a fellow student. What should he/she do?

Use of Shared Facilities

A student using a shared laboratory breaks a piece of equipment and is afraid to tell anyone. What should he/she do?

Why? Because he/she does not want to be blamed.

Why? Because he/she does not want his/her advisor to get upset.

A student using a shared lab needs a box of lab gloves for his/her lab and wonders if it would be proper to take a box from this shared lab (since there are so many of them there). What should he/she do?

The Self-Serving Syllabus

"I am a graduate student at a state university. One of four required texts for a course was written by the professor, and the subject matter of the text is also the content of his lectures. A significant portion of my grade is based on a "review" I write of his text. Is it ethical to require students to buy a book that you wrote? Aren't I already paying tuition for this professor's expertise and knowledge? **NAME WITHHELD**"

http://www.nytimes.com/2014/03/30/magazine/piracy-101.html
MARCH 28, 2014
Chuck Klosterman
A version of this article appears in print on March 30, 2014, on page MM23 of the Sunday Magazine with the headline: Piracy 101.

- 'A professor is in the rare position of being able to compel students to purchase a specific book, and sometimes that sale might earn him a royalty. This is not uncommon. But this should be avoided as much as humanly possible.'
- 'Certainly, there are exceptions — if a professor is teaching a class because of the publication of a specific book, and if the content of that class is primarily based on information contained within that text, it's acceptable for the professor to teach his own work. Obviously, a teacher will understand a book he wrote better than a book he merely read. But a required book should be both a) essential to the educational process and b) the single-best available text for that explicit purpose. While the first requirement is not difficult to fulfill, the second is relatively rare (and quite frankly, a pretty arrogant assessment for anyone to make about his own work).'

A Career in the Balance

Peter was just months away from finishing his Ph.D. dissertation when he realized that something was seriously amiss with the work of a fellow graduate student, Jimmy. Peter was convinced that Jimmy was not actually making the measurements he claimed to be making. They shared the same lab, but Jimmy rarely seemed to be there. Sometimes Peter saw research materials thrown away unopened. The results Jimmy was turning in to their common thesis adviser seemed too clean to be real.

Peter knew that he would soon need to ask his thesis adviser for a letter of recommendation for faculty and postdoctoral positions. If he raised the issue with his adviser now, he was sure that it would affect the letter of recommendation. Jimmy was a favorite of his adviser, who had often helped Jimmy before when his project ran into problems. Yet Peter also knew that if he waited to raise the issue, the question would inevitably arise as to when he first suspected problems. Both Peter and his thesis adviser were using Jimmy's results in their own research. If Jimmy's data were inaccurate, they both needed to know as soon as possible.

1. What kind of evidence should Peter have to be able to go to his adviser?

2. Should Peter first try to talk with Jimmy, with his adviser, or with someone else entirely?

3. What other resources can Peter turn to for information that could help him decide what to do?

NAS (2009) http://www.nap.edu/openbook.php?record_id=12192&page=22

Professional Decisions: Improving Your Results

A professor thinks he/she deserves a large salary raise and understands that the only way to get one is to seek more lucrative offers from other schools, and wonders whether it is proper to apply for other positions he/she has no interest in accepting just to help his salary negotiations at his current university. What should he/she do?

Analyzing Data – But They Don't Agree with Published Work

A graduate student worries that his/her data do not agree with the results published by famous scientists. What should he/she do? [Plastic Fantastic]

A graduate student worries that his/her data do not agree with the results published by famous scientists and, fearing his/her advisor, wonders whether it would be okay to modify the data a bit to achieve compliance. What should he/she do?

Jan Hendrik Schön; Plastic Fantastic

Honda Drops Takata as U.S. Issues Huge Fine Over Airbags

Nov. 4, 2015 By HIROKO TABUCHI and DANIELLE IVORY
Online version downloaded 11/5//15 and used below http://www.nytimes.com/2015/11/04/business/us-regulators-fine-takata-up-to-200-million-over-faulty-airbags.html

- Honda Motor Company on Tuesday dropped the embattled manufacturer Takata as its airbag supplier, concluding that the company, its longtime partner, had "misrepresented and manipulated test data."
- Anthony Foxx, the transportation secretary, also said that Takata manipulated the test data. In its consent order, the safety agency said that "in several instances, Takata produced testing reports that contained selective, incomplete, or inaccurate data."
- In a news conference in Tokyo on Wednesday, Hiroshi Shimizu, Takata's senior vice president for global quality assurance, denied that company engineers had manipulated test data. "There was no problem with our test results. *But because there was variation in the data, we did not report everything. We reported only part of the data,"* Mr. Shimizu said. Still, he said, "*there was no data manipulation*."

This is called cherrypicking data.

Takata Emails Show Brash Exchanges About Data Tampering

By DANIELLE IVORY and HIROKO TABUCHI
JAN. 4, 2016
Online version downloaded 2/1/2016 and used below http://www.nytimes.com/2016/01/05/business/takata-emails-show-brash-exchanges-about-data-tampering.html?smprod=nytcore-iphone&smid=nytcore-iphone-share

- "When Honda Motor Company said two months ago that it would no longer use Takata as supplier of its airbags, the automaker said that testing data on the airbags had been "misrepresented and manipulated.""
- "Now, newly obtained internal emails suggest the manipulation was both bold and broad, involving open exchanges among Takata employees in Japan and the United States."
- ""**Happy Manipulating!!!**" a Takata airbag engineer, Bob Schubert, wrote in one email dated July 6, 2006, in a reference to results of airbag tests. In another, he wrote of changing the colors or lines in a graphic "to divert attention" from the test results and "to try to dress it up.""

This is even more blatant deception.

This cheating is terrible for research and development in both academia AND industry!!!

“Stealing” Others’ Work

CREDIT WHERE CREDIT IS DUE

Ben, a third-year graduate student, had been working on a research project that involved an important new experimental technique. For a national meeting in his discipline, Ben wrote an abstract and gave a brief presentation that mentioned the new technique. After his presentation, he was surprised and pleased when Dr. Freeman, a leading researcher from another university, engaged him in an extended conversation. Dr. Freeman asked Ben extensively about the new technique, and Ben described it fully. Ben's own faculty advisor often encouraged his students not to keep secrets from other researchers, and Ben was flattered that Dr. Freeman would be so interested in his work.

Six months later Ben was leafing through a journal when he noticed an article by Dr. Freeman. The article described an experiment that clearly depended on the technique that Ben had developed. He didn't mind; in fact, he was again somewhat flattered that his technique had so strongly influenced Dr. Freeman's work. But when he turned to the citations, expecting to see a reference to his abstract or presentation, his name was nowhere to be found.

* 1. Does Ben have any way of receiving credit for his work?

* 2. Should he contact Dr. Freeman in an effort to have his work recognized?

* 3. Is Ben's faculty advisor mistaken in encouraging his students to be so open about their work?

From: On Being A Scientist: Responsible Conduct In Research, National Academy Press, 1995
- http://www.nap.edu/readingroom/books/obas/

Use of Open Sources/Web Resources

A university is upset because another organization has published a book based on its open video courses without asking any permission. What should it do?

Philosophy professor Shelly Kagan in a still shot from his Open Yale Courses video lecture series, "Death."

Shaanxi Normal University, which describes itself as “the cradle of teachers in Northwest China,” has published a book based on several of the most popular Open Yale Courses, including economist Robert Shiller’s “Financial Markets” and philosophy professor Shelly Kagan’s “Death.”

http://www.yalealumnimagazine.com/blog/?p=10384

Making Waves, Whistleblowing, Self-interest

A CAREER IN THE BALANCE

Francine was just months away from finishing her Ph.D. dissertation when she realized that something was seriously amiss with the work of a fellow graduate student, Sylvia. Francine was convinced that Sylvia was not actually making the measurements she claimed to be making. They shared the same lab, but Sylvia rarely seemed to be there. Sometimes Francine saw research materials thrown away unopened. The results Sylvia was turning in to their common thesis advisor seemed too clean to be real.

Francine knew that she would soon need to ask her thesis advisor for a letter of recommendation for faculty and postdoc positions. If she raised the issue with her advisor now, she was sure that it would affect the letter of recommendation. Sylvia was a favorite of her advisor, who had often helped Sylvia before when her project ran into problems. Yet Francine also knew that if she waited to raise the issue the question would inevitably arise as to when she first suspected problems. Both Francine and her thesis advisor were using Sylvia's results in their own research. If Sylvia's results were inaccurate, they both needed to know as soon as possible.

* 1. Should Francine first try to talk with Sylvia, with her thesis advisor, or with someone else entirely?

* 2. Does she know enough to be able to raise concerns?

* 3. Where else can Francine go for information that could help her decide what to do?

From: On Being A Scientist: Responsible Conduct In Research, National Academy Press, 1995
- http://www.nap.edu/readingroom/books/obas/

Range of Discussion

Data and Research

Authorship

Papers and Theses - Content

Preparing Proposals

Reviewing Papers and Proposals

Employment and Conflicts of Interest

Responsible conduct of research

vs. professional conduct in procedures

vs. professional conduct in society issues

vs. professional courtesy

vs. ethics in other professions

What is the main “cost” of bad ethics (aside from $)?

The Public Trust

Let’s continue our discussion

http://www.columbia.edu/~iph1/teaching

http://www.irvingpherman.com/professional

Link to Ethics (Responsible conduct of research and professionalism) **seminar presented to department students**.

Link to Ethics (Responsible conduct of research and professionalism) **mini case scenarios**.

And more