

**Responsible Conduct of Research and Professional Ethics:  
Interactive Seminars and a Continually Updated Series of Mini Case Scenarios**

Irving P. Herman  
Department of Applied Physics and Applied Mathematics  
Columbia University  
New York, NY, USA

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**Responsible Conduct of Research and Professional Ethics Seminar**

At Columbia University, applied physics, applied mathematics, and materials science and engineering doctoral students and applied physics undergraduate students participate in a ~two hour seminar that explores the responsible conduct of research and ethics of professionalism.

The seminar has three components. First, several recent egregious public examples of plagiarism, publication retraction, cheating, data falsification, gaming college rankings, and so on are introduced. These are updated each time the seminar is presented.

Second, the students are introduced to the core issues in responsible conduct of research, including data and research, authorship, content of papers and theses, and preparing and reviewing papers and proposals, and professional ethics, including issues in employment, conflicts of interest, confidentiality, and CV accuracy, and to different ways of addressing them. Other areas, such as society, industrial and medical ethics, are not covered. The words of Richard Feynman from his “Surely You’re Joking, Mr. Feynman!,” [Feynman] are used to emphasize the importance of honesty in scientific research, as is the well-documented research misconduct of Jan Hendrik Schön [Schön].

Several basic points are raised in this section:

There are some clear-cut issues and rules about what is right and wrong in research and in professional interactions. There is also much gray area. Knowing these rules is important. There are theories and codes of ethics: the more theoretical meta-ethics, normative ethics on the means to follow a moral course, and applied ethics on what a person should do in a given circumstance [Ethics]. One common goal in research, engineering and professional ethics is gaining and keeping the public trust.

What is right? Do you really know what is right? Are you, in fact, right? How can you learn what is right? Have you been wronged or are you in fact wrong thinking that you have been wronged? With whom should you discuss the situation?

When is an issue an ethical one? When is it just a mistake or misunderstanding or a legitimate difference in opinion? When is it sloppiness, which is itself unprofessional if it is deemed to be “reckless”, or an honest mistake made by a careful person (or due to bias

[Bias])? 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? Is there just right and wrong, or is there a threshold for unethical or irresponsible behavior? When is it just a matter of style or local convention? Sometimes the best response is a question asking for more details about the situation.

What is the threshold for pursuing a complaint, either in a formal or more casual manner? When is something really an ethical issue and when is it a “power” issue between people in different positions (employer/employee, professor/student)? How do you resolve real ethical issues in light of a “power” asymmetry? Should you pursue a discussion (first and then later) with a peer, advisor, ombudsperson/conciliator, or a department chair?

There is also a big difference between “giving the right answer” to an ethics-related question in an ethics training exam or at an ethics seminar and confronting the situation in the real world.

There is a wide range of ethical situations in professional situations outside of the range of the purview of this seminar, for example, ethics in engineering (am I constructing a bridge or building that I know may not be safe because of budgetary constraints?), medicine (am I ignoring the results that the show deleterious side-effects of an otherwise-promising drug?), computer/privacy ethics, ethics in business, and so on. Some of these more technical-related areas are addressed in the cited reference material.

It is also very instructive to discuss these points in the context of case scenarios. We can examine real cases, as well as fictionalized versions of real cases and totally fictional cases. Both types of these fictional scenarios are presented in the below compilation.

The third part of the seminar is an extended give-and-take inspired by several of the author’s >200 one-sentence, case scenarios, presented below (along with >100 variations of these), that span the range of ethics covered by the seminar, which are presented below. These interactions should last for most of the presentation, for a two-hour long seminar. These mini case scenarios are fictionalized versions of well-known public cases, the author’s experience base, and published case histories that are based on real events or fictionalized cases constructed for instruction. Discussion is also fostered by using plots from TV shows, such as “House” [TV show House] and “Bones” [TV show Bones] (and also “Leave it to Beaver” [TV show Leave it to Beaver Autobiography, Plagiarism] and “Death in Paradise” [TV show Death in Paradise]), and from real cases, such as the Schön case and the (supposedly humorous) example of the famous Alpha-Beta-Gamma publication [Alpha-Beta-Gamma]. Historical and fictionalized examples of misconduct by both junior and senior scientists are presented. Also, increasingly important areas in ethics are raised for discussion, including the use of open and web resources and intellectual property.

For most scenarios, there has been general agreement of what is right and wrong, and the seminar leader can help explore issues more deeply, including ways of resolving problems. There has been some disagreement among seminar attendees (and the seminar leader) in very specific areas, such the responsibilities of employees and employers.

Copies of this seminar presentation are available from the author at [Herman-Seminar].

This approach can be easily adapted to shorter and longer seminar periods. For more details about the seminar, see [Herman-Transactions]; also see [Overviews].

Please do not transmit all or any part of these notes to anyone else or anywhere, either as they are or in modified form.

## **Mini Case Scenarios: Responsible Conduct of Research and Professional Ethics**

Several potential case scenarios and issues are raised below. Many are based on real examples, including many of the seemingly more unbelievable examples, which I have seen or heard about from colleagues, or have read about in published sources. Although most of the situations described are uncommon, some are more common than you may think.

These case synopses are presented in a very concise matter (in one, sometimes run-on sentence). Sometimes details can be added that could make the case clearer or more complex or, in fact, change your opinion about the circumstance totally. They are listed in several broad, and sometimes overlapping categories, and in no specific order. Variations in the theme of a given mini case scenario are presented as parts a, b, c, ... Some of the cited cases are presented in more detail and with more complexity in the references (and in particular in the website developed at [Case]). Also see the NAS/NAE publication, *On Being A Scientist* [Being-A-Scientist], for more case studies, and [Overviews]. In each scenario, the “he/she” in “What should he/she do?” refers to the subject at the beginning of the prior sentence. (Masculine and feminine pronouns are used in alternating sections.)

These scenarios can be used to foster discussion at an ethics training seminar. When variations in a given scenario are given, they can be presented sequentially during the seminar. Alternatively, this compilation can be used for self-study.

Please do not transmit all or any part of these notes to anyone else or anywhere, either as they are or in modified form.

### **Data and Research**

#### *Research plans*

1a. Two researchers establish a research plan. As the work progresses, one of them would like to modify the plan, while the other says they must stick to the original plan? What should they do?

1b. Two researchers establish a research plan. As the work progresses, one would like to modify the plan, while the other says they must stick to the plan? The first says this is basic research and the changing the plan midstream is common in research. What should they do?

1c. Two researchers establish a research plan. As the work progresses, one would like to modify the plan, while the other says they must stick to the plan? The second says this is hardcore engineering (or medical) testing and the plan cannot be changed. What should they do?

1d. Two researchers establish a research plan. As the work progresses, one of them at times sees results first deviating from the expecting course of research, but then suddenly they change and then keep all on course. What should that researcher do?

*Data validity and quality*

1. A student sees that all of the data on a curve fit well except for one. What should he do?
- 2a. A student does the same experiment on five successive days, and sees the essentially the same results on three of them and the same, but now very different, results on the other two days. What should he do?
  - 2b. A student finds the reactions rate for eight of the ten solvents tested fall on a straight line versus solvent polarity, while those for the other two fall way above the line, and wonders whether those two deviant points should be plotted, ignored because they do not match expectations, or remeasured (either those two solvents alone or all ten of them again). What should he do? [Kovac]
3. After returning from a neutron facility, a graduate student plotted his data alongside theory and saw two data points that were very far from the curve, and wondered whether it would be okay to throw out those two points because they must have been taken during power fluctuations or due to other unexplained experimental problems, and because they could not go back to make new measurements and a competing group was about to submit a paper that showed good agreement with this theory. What should he do? [Being-A-Scientist]
- 4a. A graduate student wonders whether it would be okay to use data from different samples in one graph. What should he do? [Schön]
  - 4b. A graduate student wonders whether it would be okay to use data from different samples in one graph, selectively choosing data points to get a cleaner fit and one that is more like the anticipated result. What should he do? [Schön]
- 5a. A graduate student worries that his data do not agree with the results published by famous scientists. What should he do? [Schön]
  - 5b. A graduate student worries that his data do not agree with the results published by famous scientists and, fearing his advisor, wonders whether it would be okay to modify the data a bit to achieve compliance. What should he do? [Schön]
6. After not getting the results he and his adviser expect in nine tries, he finally gets the expected results on the tenth try and wonders whether he should risk checking the results in an eleventh try. What should he do?
- 7a. After spending a long day taking data, a student thinks it is possible that he made a mistake sometime during the day, and wonders whether he should throw out all the results of the hard work of that day and repeat the experiment the next day. What should he do?

7b. After spending a long month taking data, a student thinks it is possible that he made a mistake sometime early during that month, and wonders whether he should throw out all the results of the hard work of that month and repeat the experiment the next month. What should he do?

7c. After spending a long day taking data, a student thinks it is possible that he made a mistake sometime during the day, and wonders whether he should throw out all the results of the hard work of that day and repeat the experiment—but he would have to wait six months before having access to the experimental facility again. What should he do?

8. A student knows his work is interesting and important, but since it is not ground-breaking it is not likely that his work will be checked or repeated, and so he wonders whether it is really important to be ultra-careful. What should he do?

9. A professor hears from a junior graduate student that a signal increases when a variable is changed, but he is sure that it should decrease. What should he do?

10a. A researcher notices that a paper is being published using data he had uploaded on a common data site for open access and use, but which permitted submission of manuscripts using these data only after an embargo date that hadn't occurred yet. What should he do? [Paper-Retractation]

10b. A researcher freely uses data from a common source and wonders whether it would be okay to submit a manuscript using these data even though the embargo date has not yet occurred, because no one would ever know. What should he do?

10c. A researcher wonders why the person who posted data on a common site is so angry that he violated the terms of an embargo on manuscripts using those data, an embargo that he did not know about. What should he do?

11. A company tries to reproduce many landmark studies and finds that only a small percentage of them were reproducible, and wonders if there was fraud, bias in publishing results, excessive sloppiness in conducting the work, or more nuanced and honest unexpected issues. What should it do? [Carroll]

12a. One scientist is concerned that the joint work done by his research collaborator was research misconduct because it was obtained with excessive sloppiness, but his collaborator says it is not because he just made some mistakes. What should he do?

12b. One scientist is concerned that the joint work done by his research collaborator was research misconduct because it was obtained with excessive sloppiness, but his collaborator says it is not because he just made some mistakes and these mistakes did not change the essence of the conclusions. What should he do?

12c. The scientist then learned that after their discussions about the collaborator took additional data but said they did not have to report them (and did not in their publication). What should he do?

12d. The scientist then learned that the collaborator, when asked by the editor of the journal to which they submitted a paper if additional data were available during the entire course of their work, responded no, because they were not technically available during the entire trial. What should he do? [Duke, Thomas, mistakes]

### *Data fabrication*

1. A graduate student suspects a fellow student of fudging results, and wonders if it would be right to design a collaborative project that would be designed to expose this student. What should he do? [Sames]

2a. A graduate student sees that another graduate student was not making the measurements he claimed to be making. What should he do? [Being-A-Scientist]

2b. A graduate student sees that another graduate student was not making the measurements he claimed to be making, and is worried about telling his professor because that other student was one of the professor's favorite students. What should he do? [Being-A-Scientist]

3. An undergraduate working in a research group as a technician notices that the trend claimed by the professor for data in a spreadsheet is not supported by that spreadsheet, and after telling the professor and sending him the spreadsheet, receives the spreadsheet back with altered entries that now support that claimed trend. What should he do? [Poehlman]

4a. 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 reproduce it. What should he do? [Scientific reproducibility] [Sames]

4b. 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 reproduce it, and tells the professor, who then becomes very annoyed. What should he do? [Scientific reproducibility] [Sames]

4c. A professor tells a graduate student to reproduce the experiment done by a graduated student, as preliminary work for a more advanced experiment, and has been told by the student that he has tried the experiment many times and cannot reproduce it. What should he do? [Scientific reproducibility] [Sames]

5. A researcher cannot reproduce the experimental results published by somebody at another institution. What should he do? [Fraud], [Polywater in Being-A-Scientist]

6. After establishing a collaboration with equally prominent Scientist B, Scientist A hears that there might be something amiss with the scientific ethics of his 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 do?

7a. The scientific department head at an industrial lab hears that there might be something amiss with the scientific ethics of one of the scientists in his department. What should he do?

7b. The scientific department head at an industrial lab hears that there might be something amiss with the scientific ethics of one of the scientists in his department, and he is also a frequent collaborator of this scientist. What should he do? [Schön]

7c. The scientific department head at an industrial lab, who had signed off on a manuscript written by one of the scientists in his department, learns that this scientist has been accused of irresponsible behavior concerning the work in this manuscript and is worried that he would be held responsible too. What should he do?

8. A graduate student wonders when it would be okay to change a few data points in the data processing program because the observed curves do not show the expected peaks and if he did that less than 1% of all of the data would be affected. What should he do? [Schön]

9. An undergraduate student who just started working on a research project in a professor's research lab and is taking data wonders if it would be okay to make up some of the data because he knows that in undergraduate teaching labs half of the students fudge data and since no one complained about that, why should it be different here? What should he do? [Schön, Cheating]

10. After receiving the reviewer's comments on their joint paper, a fellow author revised the manuscript to address the comments by changing some of the data, but you wonder whether this change was proper (and not simply correcting an error). What should he do? [APS]

11a. A scientist notices that a previous scientist in his group published several sets of accumulated data, but cannot find any record of one of these sets of data within the extensive sets of data obtained and recorded in the group computer. What should he do? [APS]

11b. A scientist notices that a previous scientist in his group published several sets of accumulated data, but cannot find any record of one of these sets of data within the extensive sets of data obtained and recorded in the group computer, and he is warned by a more senior scientist in the group that this is very serious. What should he do? [APS]

12. A metallurgist wonders whether it is okay to fake the results of strength tests on steel to be used for Navy submarines because it was stupid that testing needed to occur at  $-70^{\circ}\text{C}$  and submarines do not operate at that temperature. [Metallurgist Fake Test Results]

### *Raw data and trust*

1. A professor asks to see the raw data taken by a student, and is challenged by the student, “Why do you want to see it? Don’t you trust me?” What should he do?
- 2a. A graduate student is shocked when his advisor wants to see the raw (primary) data, and not secondary data (imported into a data processing code) and wonders whether he is being trusted. What should he do? [Schön]
  - 2b. A graduate student is shocked when his advisor wants to see the raw (primary) data, and not secondary data (imported into a data processing code) and wonders whether he is being trusted, and how can this matter anyway since there were no witnesses to his taking the primary data. What should he do? [Schön]
3. A professor asks a student to give him the source code for a calculation or simulation, and is challenged by the student, “Why? Don’t you trust me?” What should he do?
4. A group leader in an industrial lab is a collaborator on several papers with a more junior scientist in his group who is doing a prolific amount of ground-breaking work, and since he is not in the lab with this scientist during experiments and never sees the raw data, wonders if he should insist on seeing the raw data and risk insulting this rising star. What should he do? [Schön]
5. 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 thinks it is important to make sure his collaborators are being scientifically responsible. What should he do?
6. A professor is concerned about the legitimacy of the work of one of his students, and during questioning the student admits to fabricating data in their current study, but swears that all the data in their earlier publications are legitimate. What should he do?
7. Just as he is about to publish a theory, a scientist learns that the data his theory was based on (and which it predicts) were faked. What should he do?

### *Record keeping*

1. A professor who 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 do?
2. A professor learns that a student is ripping pages out of his lab book. What should he do?
3. In reviewing a student's lab notebook, a professor notices an entry on a day that he is sure the student was not even on campus. What should he do?

4. A graduate student is angry with his advisor because his advisor said that all of the data he took the previous six months are invalid and cannot be used for his thesis because they were not documented in a lab book. What should he do? [Schön]

5a. A student has not been keeping a good lab book and is concerned that his professor will be upset about this, and wonders whether it would be proper to re-create his work this past month in the lab book from memory and from random notes in the lab. What should he do?

5b. A student who had re-created his lab book from memory and notes learns he is about to be a co-inventor on a patent disclosure that is based on work in his lab book, and is worried that his re-creation of the lab book could lead to legal difficulties. What should he do?

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

7. A researcher for a company claims to have obtained some results on site (and has a dated lab book showing this) on a day that the company asserts he was not even on site? What should he do?

### *Questionable motives and approaches*

1. A graduate student is accused by his advisor of scientific misconduct after the results in their joint publication were questioned by other researchers. What should he do?

2. A supervisor at a national laboratory sees that workers took and lined up the stored plutonium rods so they could take a nice photo of them, and is scared of the consequences of having so many rods placed so close together. What should he do? [Plutonium photo, sloppiness]

3. One scientist suspects that another scientist is slanting his analysis to accept either positive or the expected results (expectation bias), and avoiding doing controlled experiments, by either

- a. not recording findings contrary to expectations,
- b. seeing something because of expectations,
- c. observations to favor observations,
- d. not performing "blind" analysis of data,
- e. not checking for errors in calculations and models and not improving them when agreement with experiment or expectations first seems fine,
- f. ceasing experiments when expected results are attained,
- g. not pursuing all possible contributions to and causes of observations,
- h. correcting for systematic errors in a biased way, or out data when they disagree with expectations (not only when equipment is clearly malfunctioning) (as in the Millikan oil drop experiment)

What should he do? [Bias, Jeng]

4. A scientist wonders if bounties for publishing in high impact journals can have explicit and implicit effects in the quality of the published work. What should he do? [Bias, bounties in publishing]

## **Authorship**

### *Proper authorship*

1. A student thinks she should be first author on a paper, but is not. What should she do?
2. A student whose last name begins with “Z” is upset because in his group the convention has always been to list the authors alphabetically in papers (from A-Z of the last names), while in most other groups on campus the convention is to put the lead (junior) person as first author. What should she do?
3. A graduate student is upset because her professor has designated her as the second—and not first—author on a paper for which she took most of the experimental data—and this could hurt her job prospects, while the first author is another graduate student who is an excellent writer and who wrote most of the paper. What should she do?
4. A graduate student is upset because so many other students have been added as authors on a paper, who have clearly worked on it but less than she has, and this “diluted authorship” could hurt her job prospects. What should she do?
5. After spending 30 minutes making one measurement for a research study, a student notices that she has been acknowledged on a paper written describing the overall research study but has not been named an author, as she had expected. What should she do?
6. A professor thinks a person minimally involved with a research topic does not really deserve to be an author on a paper concerning this topic, but is afraid this person would complain loudly if omitted as an author. What should she do?
- 7a. A graduate student leading a project learns that a high school student has been added as an author (and perhaps as first author), even though the student was either not involved or minimally involved in the research, because it was thought this inclusion would help promote their program and level of research funding. What should she do?
  - 7b. A professor wants to add a high school teacher working in her lab over the summer (and who made only modest contributions to the effort) as an author to a paper because it would indicate (to some) that her program of teacher research in the summer is a success, but is troubled with setting a low bar for authorship. What should she do?
8. A graduate student, who developed a code (or constructed an apparatus) and used it for a few papers for her own thesis, notices that it has subsequently been used by students after she

graduated and she, to her dismay, was not been added as an author in the paper reporting these results. What should she do?

9. A professor is asked by a student working a project to tell her what is the minimal amount of work she needs to do to qualify as an author on a paper. What should she do?

10. A professor, deciding on the authorship of a paper, thinks a former undergraduate is a worthy author, but is unable to contact her for her permission to include her as an author and for manuscript approval. What should she do?

11. A professor, deciding on the authorship of a paper, thinks an undergraduate working in the lab on the project of the paper did the technical work requested of her, but doubts that her involvement rose to the level of authorship. What should she do?

12. A student thinks that all participants in a research project should have equal say in deciding everything relating to a paper, including authorship, while the group leader thinks that she herself should make all final decisions. What should she do?

13. A graduate student is asked by her advisor to write a review article (book chapter), hands her drafts (and makes revisions based on her advisor's suggestions), and later learns that her advisor did not include her as a co-author in the submitted manuscript, and when confronting the advisor about this is told not to worry about it because it is was a just a learning exercise and that she will get to be a co-author on other publications. What should she do? [Whose Manuscript? in Gunsalus]

14. Months after a graduate student gave a talk at a meeting about a new technique and discussed it in detail with a professor attending the meeting, she notices that the professor has just published a paper that utilized this technique—but that did not cite even her abstract from the meeting. What should she do? [Being-A-Scientist]

15. At her professor's request, a student gives a sample she synthesized to another group to use in their study, and later finds that this group wrote a paper that does not give her (and her professor) authorship or even an acknowledgment. What should she do?

16. A professor conceives of an experiment and makes arrangements to receive the needed material, and later learns that the material arrived on a day she was absent and then her colleagues performed the experiment themselves and published a paper on it without giving her any credit. What should she do? [Fermi]

17. A professor learns that a former graduate student thinks she should be an author on a paper for which she did a preliminary experiment suggested by the advisor, but did not want to continue, so it was continued by someone else. What should she do?

18. Long after a researcher gave a colleague a great idea, with the understanding that the colleague would do the experiment and (if the results warranted it) write the manuscript, and be the first author, the researcher is frustrated because after doing the successful experiment the

colleague never wrote the manuscript and now she now wants to write the manuscript herself and be first author. What should she do? [HMS]

19. A graduate student, who had answered her roommate's basic questions about the statistical methods that would be most appropriate for the latter's research, thinks she deserves to be an author on the resulting paper, but her roommate disagrees. What should she do? [HMS]

20a. A graduate student feels that she has been denied credit for a co-discovery with a professor, and feels she deserves joint authorship on a paper. What should she do?

20b. A graduate student feels that she has been denied credit for a co-discovery with a professor, and though she has received joint authorship on a paper, feels she deserves income from a patent for the discovery. What should she do?

20c. A graduate student feels that she has been denied credit for a co-discovery with a professor, and though she has received joint authorship on a paper and income from a patent for the discovery, feels she should have been co-awarded the Nobel Prize with her advisor for this discovery. What should she do? [Credit-Antibiotic]

20d. A graduate student feels that she has been denied credit for a co-discovery with a professor, and though she has received joint authorship on a paper and income from a patent for the discovery, feels she should have been co-awarded the Nobel Prize with his advisor for this discovery even though the lab book with her work is (suspiciously?) missing. What should she do? [Credit-Antibiotic]

21a. A student (or postdoc) gives her advisor to the solution to a problem and learns later that the advisor pursued it and published it with the student given an acknowledgement but not authorship, and the student is unhappy. What should she do? [APS]

21b. A student (or postdoc) gives her advisor to the solution to a problem and learns later that the advisor pursued it and published it with the student given an acknowledgement but not authorship, and the student is unhappy and remembers that she wrote up the solution in her lab book. What should she do? [APS]

22. An author on a paper is angry because her advisor made another student first author to help that person get a good job, but her own contribution was greater. What should she do?

23 An author finds he/she is one of thousands of authors and is unhappy about this and how it happened. What should shedo? [Hotz]

24. An author is furious when the lead author has included his dog (or cat) as a co-author. What should she do? [Hotz]

25. An author learns that the order of authors in one of his/her papers was determined by proximity to tenure and in another by the how they finished in a croquet tournament, and thinks this is ridiculous. What should she do? [Hotz]

26. A medical researcher is upset because after giving a draft of her paper to her supervisor for review, learns not only that he never reviewed it, but that a colleague, who had asked for her for her data, wrote a paper using those data with himself as sole author and that that paper was submitted and published after their common supervisor had approved it. What should she do? [TV show House]

27. A father learns at night that his son has an assignment to write a poem due the next day, but it is too late the son to write the poem, and so writes it himself and his son submits it, and later learns his son is about to receive a school award for that poem. What should he do? [TV show Leave it to Beaver, Plagiarism]

### *Questionable addition of authors*

1. Someone not involved with a paper notices that her name has been added to it (presumably to increase the odds of manuscript acceptance because she is famous). What should she do?

2. A graduate student is upset because her famous advisor wants to add a third (also famous) author to the paper, who never worked on the project at all, because the author list would then be humorous, but she objects because all would think the work was done by the two famous scientists and not by her. What should she do? [Alpha-Beta-Gamma]

3a. A graduate student is asked by her advisor to work with another graduate student to write the draft of a paper, and in drawing up the author list this other student wants to add a famous scientist not involved in the work as an author, so the paper would more likely be accepted by a top journal. What should she do?

3b. A graduate student is asked by her advisor to write the draft of a paper, and in drawing up the author list her advisor says she wants to add as an author someone not involved in the work but who is having a fight with their group, so the added author would not be asked to review the manuscript. What should she do?

4a. A professor wonders if it would be wrong to add her name to a research paper being written by a company because it would help them promote their results. What should she do? [Ghostwriters]

4b. A professor wonders if it would be wrong to add her name to a research paper being written by a company, who funds other work she is doing but not work in this area, because it would help them promote their results. What should she do?

4c. A professor wonders if it would be wrong to add her name to a research paper being written by a company, who funds collaborative work she is doing in this area, even though she does not agree with how they are presenting and interpreting the data. What should she do?

5a. A research scientist is angry because her manager wants to be an author on a paper, but did not work on the project aside from bringing in the funding to do the work. What should she do?

5b. A graduate student is angry because her professor wants to be an author on a paper, but did not work on the project aside from bringing in the funding to do the work. What should she do?

6. A student is upset because it is the custom of her group (or specialty) to include all group members as authors in all group papers, supposedly because their activities in the group generally contribute in some way to all group research. What should she do?

7. A postdoc learns that his professor wants to make his friend, a famous person in the field who contributed essentially nothing to the paper, as an author on their paper because it could help the paper being accepted, and thinks this is wrong. What should she do?

8. A scientist learns that in the company he just joined it is customary to add lab technicians as authors on papers and thinks this is wrong. What should she do?

9. A scientist learns that in the company he just joined it is customary to add department managers as authors on papers and thinks this is wrong. What should she do?

### *Proper involvement of authors*

1a. 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 she do?

1b. A professor finds the on-line publication of a paper by a former student (with the professor listed as an author), after seeing a recent version of her former student's CV and then being told by that former student that no such manuscript had been written or submitted. What should she do?

1c. 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 and believes that some of the data in the paper are not real. What should she do?

2a. A scientist and her colleague cannot agree how to publish their joint results, and later the scientist learns that the colleague has published their work, without consulting her, and has included her as an author. What should she do?

2b. A scientist and her colleague cannot agree how to publish their joint results, and later the scientist learns that the colleague is about to publish a single-author review article that

includes this unpublished, uncited work, and has cited her for general collaborations in the acknowledgments. What should she do?

2c. A scientist and her colleague cannot agree how to publish their joint results, and later the scientist learns that the colleague has published a single-author review article that includes this unpublished, uncited work, and has cited her for general collaborations in the acknowledgments. What should she do?

3. An advisor writes a draft of a manuscript and sends it to her graduated student. The graduated student cannot be located. What should she do?

4. An advisor writes a draft of a manuscript and sends it to her graduated student. The graduated student refuses to okay the manuscript. What should she do?

5. An advisor writes a draft of a manuscript and uses the same data as taken by this graduated student, but repeated by a new student---and does not include the previous student as an author. This previous student learns of this. What should she do?

6. A scientist describes an idea to a colleague who at first dismisses it, but later, unknown to her, embraces it and then publishes the results under the scientist's name. What should she do? [Wheeler-Kruskal]

7. A professor learns (as a result of an automatic e-mail sent by the meeting organizers to all authors) that an undergraduate who worked in her lab the previous summer submitted an abstract to a meeting to present their joint work, without any consultation or permission. What should she do?

8a. A collaborator learns that the lead author on a paper has decided that the data she contributed to a project will not be used in the manuscript being written and since she contributed little else to the article, she will no longer be an author. What should she do?

8b. A collaborator learns that the lead author on a paper has decided that the data she contributed to a project will not be used in the manuscript being written and even though she contributed little else to the article, she will still be an author. What should she do?

9a. A student is unhappy that her advisor wants to delay publication and wants to submit a manuscript, with the advisor and others as authors, but without showing it to her advisor. What should she do? [APS]

9b. An advisor learns from a journal editor that her current student submitted a manuscript for publication, but without her approval or knowledge. What should she do?

9c. A student is unhappy that her advisor wants to delay publication and wants to submit a manuscript without her advisor knowing about it or even being listed as an author, because the journal editor might then question the submission by her and not her advisor. What should she do?

10. As new student finds an error in the recently published work by others in her group, but is told that she should not be an author in the erratum they plan to publish, and she thinks that this is wrong because she found the error. What should she do?

11. The senior author has learned that not all of the authors of a submitted manuscript have responded to the request of the journal to confirm their 9 may (of the manuscript as submitted), and is concerned about delaying the review process. What should she do?

12. An author disagrees with the very limited role attributed to her in the description of who did what in a manuscript about to be submitted. What should she do? (More journals are asking authors to list how each author has contributed to the manuscript, not only for giving proper credit, but to shield authors from fraud they did no participate in.)

## **Papers and Theses**

### *What constitutes a good paper?*

1. Two graduate students are writing a research paper. One thinks the paper should primarily inform (present balanced evidence so the reader can comprehend and understand this information), while the other thinks it should primarily persuade (with a take-home message that will lead the reader to believe the given information and possibly be influenced by it). Who is right? What should they do? [Freeman]

2. Two graduate students are writing a research paper. One thinks it is most important for a paper to be original (with new findings and insights of potential impact) and correct (with good controls, following proper procedures, performed carefully and thoughtfully; and to be to the best of your knowledge, with no data fabrication, data falsification or plagiarism), while the other thinks it is most important for it to report results that are reproducible (and which can be reproduced with the information provided) and that it be well-written (and with a proper author list and citations). Who is right? What should they do?

### *The content itself in preparing papers*

1. A graduate student is upset because he is arguing with his advisor over which micrograph they should include in the paper they are writing: one showing a perfect sample, which was obtained only sometimes and whose inclusion would give the article much more prestige, or one showing a more typical sample that contained defects and whose inclusion would make the paper more ordinary. What should he do?

2. An undergraduate sees a certain feature in a signal only sometimes and wants the line in the paper describing this work to read “The signals sometimes have this feature.” while the professor says it should read “The signals always have this feature.” because whenever he is in the lab he sees it. What should he do?

3a. A researcher measures a (very good) conversion efficiency of 20% for a process sometimes, but usually measures 2%, and wants to publish a paper giving the 20% value. What should he do?

3b. A researcher measures a (very good) conversion efficiency of 20% for a process sometimes, but usually measures 2%, and wants to submit a proposal for more funding on this work and wants to use the 20% value to promote the work. What should he do?

3c. A researcher measures a (very good) conversion efficiency of 20% for a process sometimes, but usually measures 2%, and wants to use the 20% value in a progress report to the agency that is funding the work. What should he do?

4a. A scientist has data that are central to the paper but that do not look very convincing, so he wonders if it would be okay to summarize them in the main text and show the data only in the supplemental information, because the supplemental information is officially considered part of the paper. What should he do?

4b. A scientist has micrographs of samples that are central to the analysis in the paper but that do not look very convincing, so he wonders if it would be okay to present idealized diagrams of them in the main text and show the real micrographs only in the supplemental information, which is officially considered part of the paper. What should he do?

5. A scientist wants to make a more convincing case about the novelty of his work, and wonders if it would be okay to discuss the related prior work mostly or only in the supplemental information, which is officially considered part of the paper, so it may be overlooked by the reviewers. What should he do?

6a. A scientist wonders if it is okay to include in a publication or presentation a highly idealized diagram of structures on the surface of a material, when the actual structure, as determined by microscopy, is much less regular and much more uncertain than the diagram would depict. What should he do?

6b. A scientist wonders if it is okay to include in the main part of a publication a highly idealized diagram of structures on the surface of a material, and present the actual structure, as determined by microscopy, which is much less regular and much more uncertain than the diagram would depict, in the supplemental information. What should he do?

7a. 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 she can if all is disclosed. What should she do?

7b. 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 she do?

7c. 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 herself, but wonders if this is right. What should she do?

7d. 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 her advisor and other collaborators. What should she do?

8a. A scientist wonders if he can use a figure from one of his papers in another paper, properly referencing it, without it violating copyright laws and without it being considered self-plagiarism. What should he do?

8b. A scientist wonders if he can use text from one of his papers, properly referencing it, in a “perspectives” commentary/review article, without it being considered self-plagiarism. What should he do? [Self-Plagiarism]

9. A professor learns that the paper he, his recently graduated student, and others co-authored is being rejected by the journal (either during initial review or after acceptance and during the proofing stage) because it is very similar to one of the chapters in the student’s thesis, and because the journal considered these results to already be published when their university posted the thesis on the web. What should he do?

10. A professor perusing the lab book of a student who recently left his group and the university notices some great results that deserve publication, but he is not able to contact this former student after an exhaustive effort to verify the contents of the lab book and to agree on a publication strategy. What should he do? [Stanton’s Statistics in Gunsalus]

11. A journal editor learns that an image in a submitted article may be faked. What should he do? [Faked-Images]

### *How to prepare content*

1. A professor learns that a student writing a draft of a manuscript cites papers that he never read, but only saw referenced in different papers, such as review articles. What should he do?

2. A professor wonders if it would be wrong to hire a company to write his research papers, because it would be essentially the same as when graduate students or postdoctoral scientists write them. What should he do?

3. A professor wants to use a figure in a book that he is writing, and wants to cite it properly but cannot afford to pay a permission fee if, in fact, there happens to be a fee for using it. What should he do?

4. A scientist want to use notes from someone else in his paper and wonders if this is justified because there is no copyright symbol on the notes. What should he do?

5a. A person wonders if it okay to publish a paper in which some of the crucial details are misstated so others would not be able to reproduce the work quickly and compete with him. What should he do? [High Tc]

5b. Someone learns that a certain group has published a paper in which some of the crucial details have been misstated so others would not be able to reproduce the work quickly and compete with them. What should he do?

6. 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 do?

7. 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 do?

8a. A grade school student is assigned to write an essay by the teacher but thinks another in the class, who is offering to write it for him, could do a better job, and has agreed to this it (for free). What should he do? [TV show Leave it to Beaver, Autobiography]

8b. A grade school student is assigned to write an essay by the teacher but thinks another in the class, who is offering to write it for him, could do a better job, and has agreed to this it (for free), and then learns the writer has submitted it before he could review it. What should he do?

8c. A grade school student is assigned to write an essay by the teacher but thinks another in the class, who is offering to write it for him, could do a better job, and has agreed to this it (for free), and then learns the writer has submitted it before he could review it, and that the writer very recently felt insulted by him and may have written a poor essay on purpose. What should he do?

9a. 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 do?

9b. 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 do?

10. Just as he 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 do?

11a. An author wonders whether or not it is plagiarism to turn in someone else's work as your own. What should he do? (This is directly from <http://www.plagiarism.org/plagiarism-101/what-is-plagiarism/>)

11b. An author wonders whether or not it is plagiarism to copy words or ideas from someone else without giving credit. What should he do?

11c. An author wonders whether or not it is plagiarism to fail to put a quotation in quotation marks. What should he do?

11d. An author wonders whether or not it is plagiarism to give incorrect information about the source of a quotation. What should he do?

1e. An author wonders whether or not it is plagiarism to copying the sentence structure of a source, changing words, but without giving credit. What should he do?

1f. An author wonders whether or not it is plagiarism to copy 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. What should he do?

### *When to submit*

1a. A graduate student hands a draft of a paper to his advisor and they both agree that it will take several months to finalize the data analysis, and learns several months later that the advisor had submitted the paper and it was accepted. What should he do? [Sherry's Secret in Case]

1b. A graduate student hands a draft of a paper to his advisor and they both agree that it will take several months to finalize the data analysis, learns several months later that the advisor had submitted the paper and it was accepted, and when confronting the advisor about this hears that the data were good enough to publish and he needed to have this as a publication for a proposal renewal. What should he do? [Sherry's Secret in Case]

2. A graduate student is being pushed by his professor to start writing a paper describing their results in a hurry, because the professor says the work is ready for publication (and the student suspects, because the professor also needs the publication to get funding), but he does not think they are ready even to think about starting the writing process. What should he do?

3. A scientist and his colleague see an interesting result that occurs sometimes, but frequently enough to suggest it may be real and, before they write up a manuscript on it, subsequent work in their group cannot reproduce these exact results in many attempts, and the colleague insists on

publishing their early work anyway—and to ignore the later work because it could be described in a subsequent publication. What should he do?

4. One scientist tells another that the latter's conclusions cannot be supported by the data because the measurement error is too large and accuracy is too low, and is told by the latter that he is going to publish the results anyway, saying that the conclusions are rock solid, and moreover he wants to be cited as the first person to publish this result—and others repeating the measurement will be able to correct any errors he made anyway. What should he do?

5. A scientist has a great result that he wants to publish rapidly, but wants to stay ahead of the competition, and wonders whether it would be wrong to leave out a few key experimental details, introduce some typos, or give atomic or molecular symbols that are just a little bit wrong. What should he do?

6a. A graduate student has an advisor who is very busy and who needs to spend much time off campus, so he wants to write a paper all by himself so as not to bother and inconvenience his author, but wonders whether this is right. What should he do?

6b. A graduate student has an advisor who is very busy and who needs to spend much time off campus, so he wants to write and then submit a paper all by himself so as not to bother and inconvenience his author, but wonders whether this is right. What should he do?

7. A professor learns that a graduate student has sent out the manuscript that they were working on to someone (who was not an author) for comments, without his knowledge or consent. What should he do?

8. A scientist claims credit for discovering an effect because his paper announcing it was published first, but someone else with a very similar paper also claims credit because he submitted his own paper first. What should he do?

9. A doctoral student learns just before he submits his dissertation that someone else has published the same work and wonders whether his thesis will still be accepted. What should he do?

### *How to submit*

1a. A professor wants to write one long, comprehensive paper about studies done by his group that consists of several graduate students, but the graduate students instead want the work to be published as a series of short papers so each could be first author on one of them. What should he do? [Being-A-Scientist]

1b. The graduate students in a group want their work to be published as a series of short papers so each could be first author on one of them, but their professor wants to write one long, comprehensive paper about these studies. What should they do? [Being-A-Scientist]

2a. A scientist wants to increase the impact of his work so he submits essentially the same manuscript with slightly different titles and abstracts to ten different journals, but is challenged in doing this by a co-author? What should he do?

2b. A scientist wants to get his work published in the best journal possible so he submits essentially the same manuscript with slightly different titles and abstracts to ten different journals, thinking he will retract the papers accepted to all but the most prestigious journal that accepted the paper, but is challenged in doing this by a co-author? What should he do?

3a. A new staff scientist is told by his advisor to submit their joint paper to two journals at the same time, one a high-impact journal with low acceptance rate and fast turn-around and the other a good journal with higher acceptance rate and slow turn-around, and then if accepted by the former they could withdraw their paper from the latter. What should he do? [APS]

3b. A new staff scientist, still during her probationary period, is told by his advisor to submit their joint paper to two journals at the same time, one a high-impact journal with low acceptance rate and fast turn-around and the other a good journal with higher acceptance rate and slow turn-around, and then if accepted by the former they could withdraw their paper from the latter. What should he do? [APS]

4. A professor and his (professor) colleague have agreed to submit a manuscript for publication, but he learns that his colleague has made significant changes to the manuscript before submission—including to the author list and order, and to the equations and conclusions—without his approval or even knowledge. What should he do?

5. 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 thinks are far too preliminary. What should he do?

6. After his manuscript was rejected by one journal, a scientist wants to submit it to a second journal, which is published by the same professional society, but learns that he is supposed to disclose to the second journal the rejection by the first one, even though the editorial boards of the two journals are supposed to be totally separate, and he wonders whether requiring such a disclosure is proper. What should he do?

#### *Whom to cite*

1a. A professor wonders whether he should contact a set of his professional friends and enter into an agreement to cite each other's work very heavily, so all of their h-indices will soar. What should he do?

1b. A professor is contacted by a colleague who invites him to join a set of professional friends in citing each other's work very heavily, so all of their h-indices will soar. What should he do?

2. A graduate student from a big group realizes that success in his career may be determined by how many times his papers are cited and wonders whether it would be proper for all his 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 do?

3. A professor wonders whether he should submit a manuscript for publication because it is so great that it will close a field for forever and therefore it will never be cited, and so it will not increase his h-index but will decrease the number of times he is cited per published paper. What should he do?

#### *Retractions* [Paper-Retracton]

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

2. A graduate student, after being told by her advisor to include only the best data in a paper, to which she objected, learned that her advisor was told that others could not reproduce their work and then accused her of making up the data, which led to her being queried at a research misconduct hearing. What should she do?

[Chemistry: Designer debacle]

#### *Plagiarism* [Plagiarism]

1a. A professor on a thesis defense committee notices that a large part of the introduction to a thesis is very similar to or identical to sections he has read in papers. What should he do?  
[Plagiarism]

1b. A professor on a thesis defense committee notices that several chapters appear to be very similar or identical to papers written by the student. What should he/she do?

1c. A professor reading student term paper in a course learns that an on-line search shows that "much" of it is the same as material available on-line. What should he do?

2. A journal editor notices that large chunks of introductory and background material in a submitted manuscript seems to have been lifted from an article published by somebody else. What should he do?

3. A journal editor notices that a submitted manuscript seems to have the same format and structure as one from an article published by somebody else, but with words changed to reflect the topic of this article. What should he do?

4. A student notices that a manuscript being prepared by his group is very similar to one the group has just submitted (or published)? What should he do?

5a. A graduate student nearing the end of his thesis work, notices that a paper has just been published by others that covers pretty much the same work as his own work, and that is unlikely that his professor has noticed this published work. What should he do?

5b. A professor, who has a graduate student nearing the end of his thesis work, notices that a paper has just been published by others that covers pretty much the same work as his own student's work. What should he do?

6a. A student believes that her professor has used his (the student's) published work to write an independent paper. What should he do? [Plagiarism-Columbia]

6b. A faculty member believes that a colleague has used his published work to write an independent paper. What should he do?

7. An advisor notices that a paper has been published by another group that appears to essentially copy material from the doctoral thesis his recently-graduated student had posted on the web, and which they had not yet published. What should he do?

8. Someone sees a published set of data testing the effectiveness of new drug that shows the drug may provide some benefit, but that more testing is needed, and later see seemingly the same data published, and presumably plagiarized, by nine other groups, and worries that because the data set is now ten times larger, there is now greater confidence in the effectiveness drug and it may now be prescribed to the public. What should he do? [inspired by Gelman-Basboll]

*Potential theft of content (overlapping some with plagiarism)*

1a. A student allows another student to see her manuscript and before submitting it for publication learns that this other student used some illustrative (though not results-related) figures from her manuscript without permission. What should he do?

1b. A student allows another student to see her manuscript and before submitting it for publication learns that this other student used some illustrative (though not results-related) figures from her manuscript without permission, and moreover, this other student now demands that her own paper should be cited as the original source of the figures in this manuscript she is about to submit. What should he do?

2. A professor learns that another group has hacked into the computers in his group, presumably to steal data or to confirm if they got the same results. What should he do?

3. A professor learns that the research viewgraphs he gave to her project monitor from a funding agency for a review were subsequently published by that monitor as his own work (with the monitor's colleague listed as a co-author). What should he do?

4. A student does some research at one university and after graduation continues this work at another institution and wants to publish it without acknowledging his first place of work or the collaborators there, and wonders if this is right? What should he do?

5. A junior student learns that a senior student in the same group has just made a presentation at a conference presenting work that was solely that of the junior student, and he is now very angry. What should he do? [HMS]

*Questions about published papers (aside from plagiarism)*

1. A professor reads several papers describing different experiments from a rising star at an elite industrial lab and notices the experimental data traces are identical in each paper, and even the noise is the same. What should he do? [Schön]

2. A researcher perusing a published paper thinks that the author should have cited his work and did not. What should he do?

3a. A student notices that several equations in a published paper related to his research are wrong. What should he do?

3b. A professor hears from a student that several equations in a published paper related to their research are wrong. What should he do?

3c. A professor and his student point out to an author, in a casual conversation at a professional meeting, that several equations in his published paper are wrong, are told by the author that they are mistaken about this, and soon thereafter they learn that after this conversation the author submitted a new paper for publication with the corrected equations—without notifying them and without including them as authors. What should they do?

3d. A professor and his student point out to an author, in a casual conversation at a professional meeting, that several equations in his published paper are wrong, are told by the author that they are mistaken about this, and soon thereafter they learn that after this conversation the author submitted a new paper for publication with the corrected equations—without notifying them and without including them as authors—and the professor and student then notice that these “corrected equations” are still wrong. What should they do?

4. A student learns that several concepts in a published paper by his professor and a previous student are wrong. What should he do?

5. A young scientist learns that several concepts in a published paper are wrong and presents this, and is met with accusations of research misconduct and is then concerned about his career. What should he do?

6. A scientist notices that the background in the transmission micrograph (TEM) in a paper is different in different places and thinks it may have been manipulated. What should he do? [TEM Images]

7a. A student notices that the supporting information in a paper he is reading has the comment “Emma, please insert NMR data here! where are they? and for this compound, **just make up** an elemental analysis...” and is concerned that there may have been data fabrication. What should he do? [Supporting information]

7b. A student notices that the supporting information in a paper he is reading has the comment “Emma, please insert NMR data here! where are they? and for this compound, **just make up** an elemental analysis...” and is concerned that there may have been data fabrication, and whether or not he should be concerned because it is “only” in the Supporting information. What should he do?

### Preparing Proposals and Seeking Funding

1. A graduate student is asked by her professor to help prepare a research proposal and thinks this is wrong. What should she do?

2. A graduate student is shown by her professor a research proposal that she submitted, and notices that it denotes figures that were already published as being unpublished and cites experiments that were never done as being performed. What should she do? [Truth]

3. After a professor is asked by her department chair to write a joint proposal, she writes it and the chair says it is not very good, and this professor later learns the chair has submitted it with herself as the only PI and it gets funded. What should she do?

4. A professor writing a research proposal with a fellow professor learns that the latter is also involved in writing another proposal that is competitive with their own proposal, but has not told her about this. What should she do?

5. A scientist is writing a research proposal and thinks it okay to use material from a proposal she has reviewed. What should she do? [Kowalski and Paquette in ORI] [Karnik in ORI]

6a. A professor writing a proposal with a colleague that is due soon is getting little input and help from the colleague, and suspects that the colleague is also involved on a competing proposal effort. What should she do?

6b. A professor writing a proposal with a colleague that is due soon is getting little input and help from the colleague, and suspects that the colleague is also involved on a competing

proposal effort and will leave her own effort soon and so late that she would not be able to find another collaborator in time. What should she do?

7a. A professor writing a proposal with a colleague later learns that she submitted the proposal they jointly wrote by herself without including her. What should she do?

7b. A professor writing a proposal with a colleague later learns that she submitted the proposal they jointly wrote by herself without including her, and later is told by the colleague that her exclusion did not matter anyway because the proposal was not funded. What should she do?

7c. A professor writing a proposal with a colleague later learns that she submitted the proposal they jointly wrote by herself without including her, and later learns the proposal was funded. What should she do?

8a. A professor is invited to serve on two competing proposal efforts and wants to join both and wonders if this is proper. What should she do?

8b. 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 she will remain on and hurt the other effort. What should she do?

9. A professor is about to submit a proposal in response to a request for proposals, which requires submission to a government funding agency officer who is known to have requested kickbacks. What should she do? [Fraud-At-NSF]

10. The only way a scientist can continue her dream research is to accept funding from a government agency (or company) whose mission and activities she does not like. What should she do? [APS]

## **Reviewing Papers and Proposals**

### *Papers*

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

2a. A scientist is asked to review a manuscript submitted for publication that is very similar to one he is just about to submit (but clearly involves independent work). What should he do?

2b. A scientist is asked to review a manuscript submitted for publication that is very similar to one he is just about to submit (but clearly involves independent work), and wonders if it would be right to hold off reviewing it because he normally has to wait many months before receiving the reviews of his own papers. What should he do?

3. A scientist is asked to review a manuscript submitted for publication that is very similar to one he is about to write. What should he do?

4. A scientist is asked to review a manuscript submitted for publication that would be very similar to one he would write after doing the project he is just beginning. What should he do?

5a. A person wonders if it is okay to hold up the review of a manuscript because he wants to reproduce the reported results and publish the work first. What should he do?

5b. A person wonders if it is okay to hold up the review of a manuscript because he wants to reproduce the reported results and publish the work, because the other manuscript would not be delayed too long. What should he do?

5c. A person wonders if it is okay to hold up the review of a manuscript because he wants to reproduce the reported results and publish the work, because he could get an even better result, which would benefit the world of science even more. What should he do?

5d. Someone learns that a certain group is holding up the review of his manuscript because they want to reproduce the reported results and publish the work first. What should he do?

6a. A young professor writes a very positive review for a manuscript concerning the very same subject he was working himself, and wonders whether it would be right for him to continue to work on this subject and publish his own paper if his results were the same in this previous publication. What should he do? [APS]

6b. A young professor writes a very positive review for a manuscript concerning the very same subject he was working herself, submits his own paper a short time later (describing the same results as in the other paper), and is worried because the first author has complained to the journal and the journal editor might contact his department chair. What should he do? [APS]

7a. A scientist is asked to review two manuscripts submitted for publication to two different journals, at approximately the same time, that are roughly the same and from the same sets of authors. What should he do?

7b. A scientist is asked to review two manuscripts submitted for publication to two different journals, at approximately the same time, that are roughly the same and from two different sets of authors at the same institution. What should he do?

7c. A scientist is asked to review two manuscripts submitted for publication to two different journals, at approximately the same time, that are roughly the same and from two different sets of authors at different institutions. What should he do?

8. A scientist is asked to review two manuscripts submitted for publication to two different journals at approximately the same time from two different groups at the same institution, that present exactly the same raw data and similar, but not identical analysis. What should he do?

9a. A scientist is asked to review a manuscript in which his work should have been cited, but is not. What should he do?

9b. A scientist is asked to review a manuscript in which his work could legitimately be cited, but is not, and thinks it would be fine to request his citation be added as part of the review—because it would not hurt the paper and would increase the number of times his paper will be cited (and number of citations is used by some as a measure of impact and success). What should he do?

10. A scientist is asked to review a manuscript that cites his work, and is inclined to recommend publication even though it is a borderline publication because his work would be cited (and this would not be wrong because it is borderline). What should he do?

11a. A scientist wonders if it would be better to agree to all the changes recommended by the manuscript's reviewer so the so-revised paper can be accepted for publication and accepted quickly, even though he thinks some of them are wrong, rather than to fight them. What should he do?

11b. A scientist wonders if it just be easier to agree to all the changes recommended by the manuscript's reviewer so the so-revised paper can be accepted for publication and accepted quickly, even though he thinks some of them are wrong, rather than to fight them—because he can always remove these changes in the proofs. What should he do?

11c. A scientist wonders if it just be easier to agree to all the changes recommended by the manuscript's reviewer so the so-revised paper can be accepted for publication and accepted quickly, even though he thinks some of them are wrong, rather than to fight them—because his paper can start accumulating citations quickly and this would help increase his h-index. What should he do?

12. A postdoctoral scientist learns from his current advisor that the advisor (favorably) reviewed his single-author publication that the scientist wrote while under his advisor's mentorship. What should he do? [TV show Bones]

13. A graduate student is asked by his professor to help review a manuscript he has been asked to review, and wonders whether this is proper. What should he do?

14. A graduate student helping his professor review a manuscript and wonders whether it is okay to discuss the contents of the paper with a fellow graduate student. What should he do?

15. A student is told by his advisor that he is reviewing a paper that is in competition with the one he just submitted, and though it is a fine paper he plans to give it a bad review to avoid competition. What should he do? [APS]

16a. A reviewer notes that the author did include an important paper that he, the reviewer, had authored and wants to note this in the anonymous review but wonders whether this is proper. What should he do?

16b. A reviewer notes that the author did include an important paper that he, the reviewer, had authored and wants to note this in the anonymous review but wonders if this would disclose his identity. What should he do?

16c. A reviewer wants to mask his identity by suggesting that the author include a reference that he, the reviewer, did not author, but wonders whether this is right. What should he do?

17. As part of the review of his paper, an author receives a comment from the editor that more papers from the society publishing the journal should be included. What should he do?

18. 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 do?

19. 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 do?

### *Proposals*

1. A scientist is asked to review a proposal that is very similar to one he has just submitted. What should he do?

2. A scientist is asked to review a proposal that is very similar to one he is just about to submit. What should he do?

3. A scientist is asked to review a proposal that is very similar to one he has just begun to write. What should he do?

4. A scientist is asked to review a proposal and gets some research ideas from it, and wonders if it would be fine to follow up on these ideas, since they are not exactly the same as those given in the proposal. What should he do?

5. A funding officer at a government agency notices that a recently submitted proposal has a paragraph from a declined proposal that had submitted by someone else and reviewed by this more recent proposal submitter. What should he do?

6. A graduate student is asked by his professor to help review a proposal he has been asked to review, and wonders whether this is proper. What should he do?
7. A graduate student helping his professor review a proposal and wonders whether it is okay to discuss the contents of the paper with a fellow graduate student. What should he do?
8. A student is told by his advisor that he is reviewing a proposal that is in competition with the one he just submitted, and though it is a fine proposal plans to give it a bad review to avoid competition. What should he do? [APS]
9. At a brainstorming session, a postdoctoral scientist comes up with a good idea, but learns later that his advisor chose another postdoc as a co-PI on a proposal to pursue this idea, and he feels that he should have been chosen since it was his idea and would have helped launch his career. What should he do? [APS]
10. A student is told by his advisor that he is reviewing a proposal that is in competition with the one she just submitted, and though it is a fine proposal plans to give it a bad review to avoid competition. What should he do? [APS]
11. A scientist is asked to review two manuscripts submitted for publication to two different journals at approximately the same time from two different groups at the same institution, that present exactly the same raw data and similar, but not identical analysis. What should he do?

## **Grants and Money (also see other sections)**

### *Grants*

1. A professor is supporting a graduate student using a grant that is almost out of funds, and wonders whether she should fund the student from another grant which is earmarked for a research direction not currently in-line with the student's project. What should she do?
2. A graduate student, told by her professor that she needs to modify the direction of her thesis research some because her research assistantship is now being supported by a new second grant, is upset that her research plans are being altered because of money considerations and not by where the results take her. What should she do?
3. A graduate student feels her thesis work is driven by the grants she is paid by and is unhappy because she cannot pursue her research in the direction driven by her results. What should she do?
4. A student is told to investigate how chemical A hurts an environmental situation, find that a different, and hitherto ignored chemical B is really to blame, and is admonished by her advisor because they have industrial funding only to examine chemical A and because announcing to the

world that there is another chemical with a negative impact on the environment would hurt the chemical industry. What should she do? [Barking Up the Wrong Tree? in Case]

5a. A postdoctoral scientist needs to revise a manuscript she initially submitted as a graduate student, but has been told by her current professor that the government funding their study will not allow any time to be spent on this because of effort reporting rules. What should she do?

5b. A postdoctoral scientist needs to revise a manuscript she initially submitted as a graduate student at a different university, but has been told by her professor that effort reporting rules of their current government funding require that she spend 100% of her professional time on the funded project and so she cannot work on such other activities. What should she do?

6a. A professor learns that her recently graduated doctoral student (now a postdoctoral scientist elsewhere), refuses to publish with her any more papers from their joint studies, and she is upset because the publishing that work is needed to continue the grant that previously supported that student. What should she do? [Macrina]

6b. A professor learns that her recently graduated doctoral student (now a postdoctoral scientist elsewhere), refuses to publish with her any more papers from their joint studies because they had a falling out, and is she upset because the publishing that work is needed to continue the grant that previously supported that student. What should she do?

6c. A professor learns that her recently graduated doctoral student (now a postdoctoral scientist elsewhere), refuses to publish with her any more papers from their joint studies because they had a falling out and claims that her thesis is copyrighted under her name (so the advisor has no rights to publish the work), and she is upset because the publishing that work is needed to continue the grant that previously supported that student. What should she do?

7. A researcher, who had pled guilty to committing academic fraud as charged by the U.S. Office of Research Integrity (ORI), finished serving her sentence of being barred from receiving federal research funds and being listed on the ORI website as an ethics offender for three years, and is now angry because her “record” was not totally expunged, as she had expected, because internet searches still show records of her violation. What should she do? [McCook]

8. 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 she do?

### *Intellectual property*

1a. A graduate student and her professor have a brainstorming sessions and came up with several good ideas for research, and the student later learns that her professor has filed for a patent for these ideas without consulting her or including her as an inventor. What should she do?

- 1b. A graduate student is told by her advisor to work on a project, and the student later learns that her professor has filed for a patent related to this project without consulting her or including her as an inventor. What should she do?
2. A graduate student notices some a strange unexpected deposit during an experiment and her adviser figures out what it is and that is important and worthy of a patent, and wonders whether she should expect to share in the benefits from the ensuing intellectual property. What should she do?
3. A student does some research at one university and after graduation continues this work and wants to file a patent on this work without acknowledging her first place of work or the collaborators there, and wonders if this is right? What should she do?
4. A student learns that she will be listed as a co-inventor on a patent application that will use her lab book as part of the proof of invention, and is worried because she sometimes modified pages in the lab book at later dates, which could lead to legal difficulties. What should she do?
5. A graduate student feels that her thesis work is being driven by the needs of the company started by her professor. What should she do?

### *Other money*

- 1a. A graduate student sees an opportunity to use a shared research laboratory instrument without signing up for it and paying a user fee—which she thinks would be good for her advisor’s research budget—and wonders if this is right. What should she do?
- 1b. A student using a shared laboratory breaks a piece of equipment and is afraid to tell anyone (for fear of being blamed and advisor anger). What should she do?
- 1c. 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 she do?
- 1d. A graduate student needs to use some gold wire for an experiment in a shared research laboratory facility, and sees an opportunity to use the wire stored by another research group without getting permission to do so (and without paying for it), and wonders if this is right. What should she do?
2. A professor learns that one of her graduate students applied for reimbursement for the exact same trip twice, and received funds both times. What should she do?

## **Employment and Conflicts of Interest**

### *Seeking employment and admissions*

1. A graduate student nearing the completion of his thesis learns of a job opening that he is very interested in, wants to tell a fellow graduate student who would also be interested about the position, but fears competition from that student and feels bad about this. What should he do?
2. A graduate student nearing the end of his thesis wants who wants to finish his degree and then leave science, sees a few ways that he could finish a little quicker by cutting corners that he would never even consider if he had wanted to remain in science. What should he do?
3. A postdoctoral scientist interviewing for a faculty position is asked whether he has a spouse or partner and whether that person has relocation issues, and wonders if such a question is proper. What should he do?
4. A postdoctoral scientist interviewing for a faculty position is asked about the salary and start-up funds of other offers he has received, and wonders if he should inflate these amounts to get an even better offer. What should he do?
6. A graduate student finishing his thesis receives employment offers from companies A and B at the same time and accepts the offer from company A, and wonders whether he needs to decline the offer from B at the same time. What should he do?
- 7a. A graduate student finishing his thesis applies for employment with companies A and B, receives and then accepts the offer from company A, later receives an offer from company B—which he prefers—and wonders whether it would be proper to then rescind his acceptance to company A and accept the offer from company B. What should he do?
  - 7b. A graduate student finishing his thesis applies for employment with companies A and B, receives and then accepts the offer from company A, later receives an offer from company B—which he prefers—and wonders whether it would be proper to then rescind his acceptance to company A and accept the offer from company B, even though he knows that after he accepted company A they informed all other applicants that this position was no longer available. What should he do?
- 8a. A company makes an offer of employment to graduate student A finishing his thesis, but just learns that student B has applied for the same job and it prefers him and wonders whether it would be proper to rescind the offer to student A so it can make one to student B. What should it do?
  - 8b. A company makes an offer of employment to a graduate student A finishing his thesis, but just learns that student B has applied for the same job and it prefers him and wonders whether it would be proper to try to convince student A from accepting, by purposefully and actively making the job seem to be undesirable and a bad match for him, so he would reject the offer, so it can make one to student B. What should it do?

9a. A graduate student finishing his thesis has already accepted a position, and then accepts an interview for a different position—because he may prefer this other position—and wonders whether this is proper. What should he do?

9b. A graduate student finishing his thesis has already accepted a position, and then accepts an interview for a different position—not because he prefers this other position, but because the interview itself would give he a broader range of interview experience, which may be beneficial in the future—and wonders whether this is proper. What should he do?

10. An undergraduate student applies to graduate school at universities A and B, receives and then accepts the offer from university A at the time of the universal deadline for making decisions, later receives an offer from university B—which he prefers—and wonders whether it would be proper to then rescind his acceptance to university A and accept the offer from university B. What should he do?

11. An admissions officer learns from a candidate on the waiting list that his school is the candidate's top choice, but later, after being admitted, the candidate needs more time to make a decision, and the officer is very surprised. What should he do?

12. An admissions officer learns from candidate who accepted admission that he has decided to decline it, way after new admissions could be made. What should he do?

13. A graduate student looking for a job has reason to believe that his employment possibilities for a particular job opportunity would be enhanced if he posed as a current undergraduate student and wonders if this would be right (and after all he had been an undergraduate)? What should he do?

14. At a job interview for an assistant professorship, a student (or postdoc) is asked about experimental details, but decides not to provide them because he had been told not to do so by his advisor because they had not submitted the patent and paper announcing the details and then faces continued questioning about them both during and after the seminar. What should he do?  
[APS]

15. A few days after a graduate student receives an offer for a postdoctoral scientist position by e-mail from a professor, the professor tells him that the partially-official offer letter cannot be finalized because he just learned that his funding cannot be used to support a postdoctoral scientist. What should he do?

16. A college senior, who intends to delay graduate or professional school for a year, plans to apply for admission for this year and, if accepted, to request a deferment, and wonders if this is right. What should he do?

17. A college senior is accepted to a graduate program he does not want to attend, but wonders if it would be right to attend their all-expenses paid open house to all accepted students because it would give him a free trip to a city he would like to visit. What should he do?

18a. A college senior is accepted to a graduate program and is slated to work for Professor A who is not his first choice, and wonders if it is right to accept the position and then try to switch to his first choice Professor B sometime after he arrives on campus. What should he do?

18b. A graduate student completing his thesis receives an offer for a postdoctoral scientist position from his second choice, Professor A, but not from his first choice, Professor B at the same university, and wonders if it is right to accept the position with Professor A and then try to switch to Professor B sometime after he arrives on campus. What should he do?

*Resumes and job applications (and the like)* [False-Credentials], [Kean-President]

1a. A scientist applying for a job in industry wants to make sure his resume puts him in the best possible light and wonders whether it would be okay to tweak his resume by listing his 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 do? [Kean-President]

1b. A scientist filling out the on-line application for a job in industry, is faced with inputting his undergraduate minor from a drop-down list of “physics, chemistry, materials science and engineering, other, and none” and wonders whether it would be proper to click on materials science and engineering, even though his minor was officially materials science. What should he do?

2a. A professor notes that an adjunct professor states on his LinkedIn site that he earned his doctorate in the professor’s department, but he knows this is not true. What should he do?

2b. The department chair learns from a member of his department that an adjunct states on LinkedIn that he received his doctorate from their department 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. What should he do?

2c. The department chair learns from a member of his department that an adjunct states on LinkedIn that he received his doctorate from their department 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 that university does not offer doctorates. What should he do?

3. Someone suspects the university transcript for a job applicant has been altered. What should he do? [Ex-SAC-Trader]

4. The faculty at a university learn that the resume of their president lists articles as accepted for publication that the peer-reviewed journals claimed they had never seen. What should they do? [Kean-President]

5. Someone notices that someone with an applied physics undergraduate degree lists it instead as a physics degree. What should he do?

6. 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 do? [Job applications-ChatGPT]

*Conflicts of interest and employment*

1. A professor does consulting for (or has stock in) a laser company, and wonders whether he should buy for his lab a laser from that company or from a competitor, which may sell a slightly less expensive model. What should he do?

2a. At a department seminar, a graduate student whose professor consults with company A hears about work from a professor from a different group—who consults on a competing project at company B—that would be helped by his own research, and wonders if he should tell those at the seminar how his own research could help and then later tell his advisor what he did. What should he do? [Being-A-Scientist]

2b. At a department seminar, a graduate student whose professor consults with company A hears about work from a professor from a different group—who consults on a competing project at company B—and wonders whether he should later tell his adviser about the work presented at the seminar because of the competition between the two groups. What should he do? [Being-A-Scientist]

3a. After co-filing a patent application with his advisor, a student starts a job, learns that his discovery could help his new company immediately, but wonders whether it would be proper to disclose his application to his new employer because it may jeopardize the application. What should he do? [APS]

3b. After co-filing a patent application with his advisor, a student starts a job, learns that his discovery could help his new company immediately, but wonders whether he should disclose his application to his new employer because they are aggressive and may be able to steal the idea. What should he do? [APS]

4a. A theorist brought into a collaboration with an experimentalist at one institution who has a great new idea, is invited to speak at a second institution which competes with his new collaborator, and wonders whether it would be right to discuss this work and idea at this presentation? What should he do? [APS]

4b. A theorist brought into a collaboration with an experimentalist at one institution who has a great new idea, is invited to speak at a second institution which competes with his new collaborator, and thinks it would be right to discuss this work and idea at this presentation because his collaborator never explicitly said he should not disclose it? What should he do? [APS]

4c. A theorist brought into a collaboration with an experimentalist at one institution who has a great new idea, is invited to interview for a position and to speak at a second institution which competes with his new collaborator, and thinks it would be right to discuss this work and idea at this presentation because he wants to help his case for employment as much as possible. What should he do? [APS]

5a. The dean of school at a university learns that a department in the school is seriously thinking about hiring his qualified son as a junior, untenured faculty member, and wonders if the proper thing to do would be to recuse himself from all aspects of the hiring process, including the usual final decision of hiring by the dean. What should he do?

5b. The dean of school at a university learns that a department in the school is seriously thinking about hiring his qualified son as a junior, untenured faculty member, and wonders if the proper thing to do would be to recuse himself from all aspects of the hiring process, including the usual final decision of hiring by the dean, even after he gets approval from the provost, who is the dean's supervisor. What should he do?

5c. The dean of school at a university learns that a department in the school is seriously thinking about hiring his qualified son as a junior, untenured faculty member, and wonders if the proper thing to do would be to recuse himself from all aspects of the hiring process, including the usual final decision of hiring by the dean, because he does not expect to be dean for a long time, and in particular when a potential tenure review of her son could occur. What should he do?

6a. The dean of school at a university decides to hire his wife to oversee diversity efforts in the school, which would include interactions with faculty reporting to the dean, and wonders if this would be proper. What should he do?

6b. The dean of school at a university decides to hire his wife to oversee diversity efforts in the school, which would include interactions with faculty reporting to the dean, and wonders if this would be proper and whether to disclose to the faculty that she is his wife, which they may not know because they have different last names. What should he do?

7a. The head of a company decides to hire his son as a very high executive, and wonders whether this would be proper. What should he do?

7b. The head of a company decides to hire his son as a very high executive, and wonders whether this would be proper since this is a family-owned business. What should he do?

7c. The head of a company decides to hire his son as a very high executive, and wonders whether the shareholders would object. What should he do?

*Other employment*

1. A professor thinks he 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 has no interest in accepting just to help his salary negotiations at his current university. What should he do?

2a. After a professor at a state university complained publicly that the university was mishandling his government grant, the university reduced his pay and returned the grant. What should he do? [Professors'-Freedoms]

2b. After a professor at a private university complained publicly that the university was mishandling his government grant, the university reduced his pay and returned the grant. What should he do? [Professors'-Freedoms]

3a. After a tenured professor refused a student's request for a special opportunity to raise his grade, the University assigned another faculty member to work with the student. What should he do? [Court-Endorses-Tenure]

3b. After a tenured professor refused a student's request for a special opportunity to raise his grade, the University assigned another faculty member to work with the student and fired the professor after he filed internal grievances. What should he do? [Court-Endorses-Tenure]

4. A researcher doing research funded by a company learns that she is forbidden to publish results, but others funded by the same company are permitted to do so because their results are more promising to the company (such as better results for a drug besting tested). What should she do?

5a. During a job interview a scientist is asked whether she likes working long hours, and wonders whether this question is ethical? What should she do?

5b. During a job interview a scientist is asked whether she likes working long hours, and wonders whether responding yes would be ethical even if she would not "like" doing this? What should she do?

5c. During a job interview a scientist is asked whether she likes working long hours, and wonders whether responding a willingness to do so would be ethical even if she would not "like" doing this? What should she do?

6. A person who, unknown to most, is quite ill learns that she is receiving an offer to a major job, which, if she accepts it, would require her new potential employer to devote great resources to her position (that would be useful only to her and not any other potential hires), and wonders whether her right to privacy about medical issues overrides all other potential ethical concerns that accepting this new job would entail. What should she do?

## **Other University/Research Misconduct, including professionalism**

### *Mentoring and collaborations*

1. A student feels “under the gun” from her adviser (e.g. a paper about her work is about to be presented at the meeting and new results are needed, the adviser is pushing for a new manuscript for publication be prepared and submitted soon, the adviser has intimated that he might drop the student’s financial support if progress is not faster, the student is fast approaching the length time that a student can remain in the program, and so on). What should she do?

2a. A graduate student is asked by her professor to help build her house. What should she do?

2b. A graduate student is occasionally asked by her professor to run minor personal errands for her. What should she do?

3. A graduate student notices something interesting in her experiment, discusses it with her adviser, publishes a paper on it jointly with her adviser, and then only her adviser wins a Nobel Prize for this work. What should she do? [Jocelyn Bell in Being-A-Scientist]

4a. A professor, who rarely sees one of her doctoral students in the lab or office and who wonders if she is working at all or working only during off-hours and without the benefit of the interaction of group members, asks the student to work “normal business hours” and then the student takes offense and says that she can do her work well without acceding to the mentor’s request. What should she do? [Macrina]

4b. A doctoral student confronted by her professor who wants her to work “normal business hours” to interact better with her and the group, is convinced that she knows better how to be effective in research. What should she do?

4c. A doctoral student confronted by her professor who wants her to work “normal business hours” to interact better with her and the group, is insulted by the suggestion and its implications. What should she do?

5a. To greatly improve results, a professor wants to change the type of material her student is working on, but since this new material is more toxic than the former one she wonders whether she should consider implementing the suggested additional safety protocols for this new material. What should she do? [APS]

5b. To greatly improve results, a professor wants to change the type of material her student is working on, but since this new material is more toxic than the former one she wonders whether she needs to consider the suggested, but very, very expensive, additional safety protocols for this new material. What should, she do? [APS]

5c. To greatly improve results, a student is told by her professor to change the type of material she working on, but she suspects that the new material is more toxic than the former

and wonders whether she should raise this issue with her advisor (and, if so, how). What should, she do? [APS]

6a. A postdoctoral scientist thinks that she needs additional expertise to conduct an experimental (or to do analysis), and wants to seek this help from (and enter into an extensive collaboration) with another professor, but is afraid of discussing this with her own professor because it might make her professor think she, the postdoc, is incompetent. What should she do? [Zwolenik]

6b. A postdoctoral scientist thinks that she needs additional expertise to conduct an experimental (or to do analysis), and wants to seek this help from (and enter into an extensive collaboration) with another professor, but is afraid of discussing this with her own professor because it might make her professor think she, the professor, is incompetent. What should she do? [Zwolenik]

6c. A professor learns that her postdoctoral scientist has entered an extensive collaboration with another professor (who may or may not be a competitor), but has never even brought up with her such a collaboration as even a possibility. What should she do? [[Zwolenik]

6d. A professor is unhappy because she has been spending so much time discussing methods and analysis with a postdoctoral scientist from another group that her own work is suffering and also suspects that the postdoctoral scientist's advisor doesn't even know of this interaction. What should she do? [Zwolenik]

7. A graduate student is told by her professor that she should collaborate in one area related to her research with a certain research group, but she thinks a different group could collaborate even better in this area. What should she do?

8a. A professor is angry because her dean is telling the faculty to encourage their doctoral students to pursue careers in academia, and particularly in top-ranked universities, so it will reflect well on their university. What should she do?

8b. A professor is angry because her dean is telling the faculty to encourage their doctoral students to pursue careers in academia, and particularly in top-ranked universities, so it will reflect well on their university, and learns that her success at doing this is essential for promotions and pay raises. What should she do?

9. 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? [Marcus]

*Making decisions without the authority to do so*

1a. A graduate student in a group is confident that she needs more lab and desk space to complete her studies. A graduating student has just vacated lab and desk space in the same group, and she thinks she should take them over because she needs them to complete her thesis. What should she do?

1b. A professor is recruiting a new student to her group and learns that the lab and desk space she was going to use for this person, which had been vacated by a previous student, has been occupied by another student (in addition to the student's earlier lab and desk space) without her permission. What should she do?

2a. A graduate student is told by a student in another group that she would like to borrow a piece of equipment and install it in her own lab. What should she do?

2b. A graduate student, told by a student in another group that she would like to borrow a piece of equipment and install it in her own lab, wonders if this is okay because it is not being used in her own group. What should she do?

3a. A student is asked by another student to loan her her ID card so she can enter a shared research laboratory facility, for which she had never received authorization. What should she do?

3b. A student learns that her own ID card was borrowed by another student so that she could enter a shared research laboratory facility, for which she had never received authorization. What should she do?

4a. A student using a shared research laboratory facility needs a box of lab gloves for her lab and wonders if it would be proper to take a box from this shared lab. What should she do?

4b. A student using a shared research laboratory facility needs a box of lab gloves (and other supplies) for her lab and wonders if it would be proper to take a box from this shared lab, especially since her group uses and pays for using the equipment there anyway, this lab has so many gloves and other supplies, and nobody would ever notice the loss of supplies. What should she do?

5a. A student breaks a piece of equipment in a shared research laboratory facility and wonders whether it would be okay not to report it immediately. What should she do?

5b. A student breaks a piece of equipment in a shared research laboratory facility and wonders whether it would be okay not to report it immediately because there was no witness to the breakage and there is no evidence that she was the one who broke it. What should she do?

5c. A student breaks a piece of equipment in a shared research laboratory facility and wonders whether it would be okay not to report it immediately because she does not want to

be blamed for the breakage and her advisor would be upset about this breakage. What should she do?

5d. A student spills acid in a shared research laboratory facility, and since there is no evidence that she was the one who did it and since no one got hurt, wonders whether she should report this spill. What should she do?

6. A graduate student supported as a full-time research assistant by a professor wants to earn extra money by taking a part-time job and is not sure her advisor would approve, and wonders if it would be okay to do so with consultation since the advisor would never know. What should she do?

7. A graduate student supported as a full-time research assistant by a professor wants to take university courses unrelated to her research and is not sure her advisor would approve, and wonders if it would be okay to do so without consultation since the advisor would never know. What should she do?

8. A student, with access to a machine shop with a couch, wonders why everyone is making such a big deal out of her letting a drunk friend sleep off stupor on the couch in the early hours of the morning. What should she do?

9. A person, planning to take a standardized (entrance or certification) exam, can get access to questions from exams of previous years, and wonders whether she should use them for preparation even though this is expressly forbidden by the testing agency. What should she do? [Certification-Exam-Cheating]

### *Teaching related*

1. A graduate teaching assistant allows a student to hand in her homework set late—and even after a solution set has been distributed—and then notices that the homework this student handed in was clearly copied from the solution set. What should she do?

2a. A professor notices that the course text she uses that is also printed for overseas sale is much cheaper than the one available for domestic sale, and would like to tell her students about it so they could save money. What should she do?

2b. A professor notices that the course text she uses that is also printed for overseas sale is much cheaper than the one available for domestic sale, and would like to tell her students about it so they could save money but thinks the author and publisher would then lose money. What should she do?

2c. A professor notices that the course text she uses that is also printed for overseas sale is much cheaper than the one available for domestic sale, and would like to tell her students about it so they could save money, but importing that book is not legal. What should she do?

2d. A scientist notices that the pharmaceutical she developed is much more expensive domestically than it is for overseas sale. What should she do?

3. A public-school teacher with a limited budget for supplies wonders whether it is unethical to illegally download copyrighted instructional materials for use in her class? What should she do? [Klosterman]

4. A student in a class wonders if it is ethical to require students to buy a book written by the instructor for that class, since she is already paying tuition for this professor's expertise and knowledge. What should she do? [Klosterman]

### *Confidentiality and writing reference letters*

1a. While conducting a faculty search, a faculty member sees a confidential recommendation letter for an applicant who is a former student that is uncomplimentary, and thinks it would not be divulging a confidence by suggesting to that former student not to use that letter writer again, because she would not be saying explicitly that the letter was uncomplimentary. What should she do? [Cohen]

1b. While conducting a faculty search, a faculty member sees a confidential recommendation letter for an applicant who is a former student that is uncomplimentary, and thinks it would not be divulging a confidence by suggesting to that former student not to use that letter writer again, because she would not be saying explicitly that the letter was uncomplimentary and, anyway, that letter writer has a reputation for being churlish. What should she do?

1c. After a scientist writes a confidential recommendation letter for a faculty search candidate, that candidate contacts the scientist and is angry because she somehow learned that the scientist wrote a uncomplimentary letter for her faculty application. What should she do?

1d. A postdoctoral scientist is told by her former mentor, who has seen a confidential recommendation letter written on her behalf, not to request a letter from that person again. What should she do?

1e. A postdoctoral scientist is told by her former mentor, who has seen a confidential recommendation letter written on her behalf, not to request a letter from that person again, and that postdoctoral scientist wants to let that letter writer know that she knows about the letter and is angry. What should she do?

2a. After sending the provost an evaluation of a colleague she requested, a tenured professor learns that the provost sent some of the comments to that colleague—attributing them to her. What should she do? [Cohen]

2b. After sending the provost an evaluation of a colleague she requested, a tenured professor learns that the provost sent some of the comments to that colleague—attributing them to her,

and that the provost thinks this evaluation was not confidential because they were transmitted by e-mail. What should she do? [Cohen]

2c. After sending the provost an evaluation of a colleague she requested, a tenured professor learns that the provost sent some of the comments to that colleague—attributing them to her, and that the provost thinks that colleagues should know what is being said about them and by whom. What should she do? [Cohen]

3a. In writing recommendation letters for graduate school, a professor wonders if it would be right to rate students in the 10% when they are only in the top 50%, because it would help the students gain admission to better schools. What should she do?

3b. In writing recommendation letters for graduate school, a professor wonders if it would be right to rate students in the 10% when they are only in the top 50%, because it would help the student gain admission to better schools, and this would reflect well on her department. What should she do?

3b. In writing recommendation letters for graduate school, a professor wonders if it would be right to rate students in the 10% when they are only in the top 50%, because it would help the student gain admission to better schools, and everyone exaggerates this assessment. What should she do?

4a. When a professor is asked to write a letter of recommendation for a former undergraduate, she notices that the GPA on the resume is lower than that on the transcript. What should she do?

4b. When a professor is asked to write a letter of recommendation for a current undergraduate, she notices that the GPA on the resume is lower than that on the transcript. What should she do?

4c. When a professor is asked to write a letter of recommendation for an engineering design job for a former undergraduate, he notices that the GPA on the resume is lower than that on the transcript and wonders whether the apparent lack of ethics in reporting an accurate GPA will translate into a corresponding lack of ethics in reporting accurate design criteria. What should she do?

5. When a student asks a professor for a letter of recommendation she is asked for a draft letter, and wonders whether this is proper. What should she do?

### *Whistleblowing* [Gunsalus]

1a. A graduate student suspects a fellow student is not recording data ethically and wonders whether she should tell their advisor about this, because it would be wrong to “rat” on a fellow student. What should she do?

- 1b. A graduate student suspects a fellow student is always absent from the lab and wonders whether she should tell their advisor about this, because it would be wrong to “rat” on a fellow student. What should she do?
- 1c. A graduate student suspects a fellow student is plagiarizing in her papers and thesis, and wonders whether she should tell their advisor about this, because it would be wrong to “rat” on a fellow student. What should she do?
- 1d. A graduate student suspects a fellow student is breaking equipment in the lab and not reporting or fixing it, and wonders whether she should tell their advisor about this, because it would be wrong to “rat” on a fellow student. What should she do?
- 1e. A graduate student suspects a fellow student is conducting experiments in an unsafe manner, and wonders whether she should tell their advisor about this, because it would be wrong to “rat” on a fellow student. What should she do?
- 2a. A young doctoral student has reason to believe that her advisor has been manipulating data but is afraid of whistleblowing because her own career could be ruined in the process. What should she do? [APS]
- 2b. An advisor is accused by her young doctoral student of manipulating data. What should she do? [APS]
- 3a. A professor suspects a fellow professor of research misconduct. What should she do?
- 3b. A tenured professor suspects a fellow untenured professor of research misconduct. What should she do?
- 3c. An untenured professor suspects a fellow tenured professor of research misconduct. What should she do?
4. One scientist suspects another scientist of research misconduct and wonders whether she should be a whistleblower and contact the government agency funding the work of the other scientist. What should she do?
- 5a. One scientist suspects another scientist of research misconduct and wonders whether she should be a whistleblower and contact the government agency funding the work of the other scientist. What should she do?
- 5b. One scientist suspects another scientist of research misconduct and wonders whether she should be a whistleblower and contact the government agency funding the work of the other scientist, and wonders what is the threshold for calling this misconduct. What should she do?
- 5c. One scientist suspects another scientist of research misconduct and wonders whether she should be a whistleblower and contact the government agency funding the work of

the other scientist, and wonders how certain she should be of this before she proceeds. What should she do?

5d. One scientist suspects another scientist of research misconduct and wonders whether she should be a whistleblower and contact the government agency funding the work of the other scientist, and worries about damage to herself. What should she do?

5e. One scientist suspects another scientist of research misconduct and wonders whether she should be a whistleblower and contact the government agency funding the work of the other scientist, and worries about the permanent damage it could do to the accused and those associated with the accused. What should she do? (Baltimore and group exoneration exception, after long time and great cost)

6. A town doctor suspects the water from the town spa and baths, which draw many vacationers and much town revenue, are contaminated and is concerned and asks the town newspaper to print the story, but after pressure from the mayor does not publish it and the doctor is then labeled an enemy of the people. What should she do? [Ibsen, *Enemy of the People*]

7a. A person overseeing the construction of a bridge learns that quite a few bolts used in construction are breaking when tightened. What should she do? [Cuomo/Tappan Zee Bridge construction]

7b. A person overseeing the construction of a bridge learns that quite a few bolts used in construction are breaking when tightened and her reports to management on this seem to be ignored. What should she do?

8a. A company seeking even larger Air Force grants in the future agrees to build airplane brakes, but they overheat, and it decided not to change the design but instead falsify the test report, and later there was brake failure during a test flight. What should it do?

8b. An employee then accused the company of qualification test report falsification and ethical misconduct, to which the company replied "... we were not really lying. All we were doing was interpreting the figure the way we knew they should be. We were just exercising engineering license." What should the employee and company do? [B. F. Goodrich] (classic whistleblowing case)

### *Collegiality*

1. A professor learns that a fellow professor has been recruiting and is about to hire a key non-technical staff member from his own group. What should he do?

2. A professor learns that a fellow professor has been recruiting a graduate student (or postdoctoral scientist) from his own group. What should he do?

3. A professor with much research funding who needs more laboratory space wants to talk to the dean about acquiring the space of another professor whose lab borders hers, and wonders whether she should consult with this other professor before seeing the dean. What should she do?

*Conflicts of interest*

1. The chief medical officer of a major medical center says that his failing to disclose payment from health care companies in his research articles should not reflect on the value of his research, and in any case it was unintentional, is upset because he was asked to resign. What should he do? [Disclosing payments]

*Professionalism in research and universities*

1. A scientist wants to submit an abstract for a contributed presentation at a conference, which describes work that she expects to have done by the time of the meeting, in addition to work already done, and wonders if this is right. What should she do?

2a. A scientist preparing a contributed presentation at a conference wonders whether she is obligated to report on her later studies that are related to but beyond the purview of the submitted abstract. What should she do?

2b. A scientist preparing a contributed presentation at a conference wonders whether she is obligated to report on her later studies that are related to but beyond the purview of the submitted abstract, which are in conflict with the results presented in the abstract. What should she do?

3. 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? [Yale-Open-Course]

4. A professor is concerned that accepted students from the waitlist are not counted in university statistics for admissions selectivity and yield. What should she do?

5a. A researcher finds that a new code (from a colleague or company) runs much, much slower on the current computer than advertised (for that computer). What should she do?

5b. A researcher finds that a current code runs much, much slower on the newly installed computer than advertised (for that computer). What should she do?

6. A scientist knows her published study is making her a candidate for the Nobel Prize, but she may not win it because the submission date for her published paper was a little after that of a competitor who published similar results, but knows that her manuscript had been first submitted

to another journal earlier than her competitor's but had been rejected by that first journal. What should she do?

7a. A scientist has political beliefs that are deemed controversial by a fraction of her community, and is concerned that her career would be destroyed if her views became known. What should she do?

7b. A scientist has opinions on technical matters that are deemed controversial by a fraction of her community, and is concerned that her career would be destroyed if her views became known. What should she do? [APS]

7c. A scientist wonders whether she has enough technical knowledge and expertise in an area to take a public stand on the associated public technical issue, such as by signing a petition promoting one side of the issue. What should she do? [APS]

8a. A professor is asked a question by a student in her class during office hours that happens to be extremely similar to one she has prepared for an upcoming class exam. What should she do?

8b. A professor is asked a question by a student in her class during a question-and-answer session with the entire class that happens to be extremely similar to one she has prepared for an upcoming class exam. What should she do?

9a. 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, and so 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 with a minor tweak that highlights the work of that first author, and wonders whether this is proper and plagiarism? What should she do?

9b. 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, and so 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 with a minor tweak that highlights the work of that first author, and one of the students wonders whether this is proper and plagiarism? What should she do?

9c. A journal editor notices that 5 manuscripts submitted to 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 she do?

**Ethics in the technical, engineering and medical professions, including safety (also see whistleblowing)**

*Industrial ethics - design and construction, and safety*

1. Engineers are upset because their initial plans for a suspension bridge, based on standard engineering principles, are about to be replaced with a slimmer, more elegant, less expensive design, and less rigid design. What should they do? [Tacoma Narrows Bridge Collapse] {This is the basis of the famous Tacoma Narrows Bridge collapse in 1940.)

2. A contractor for the walkway across the lobby of a hotel is concerned that revised plans for the construction of the walkway were changed and accepted without an engineering review. What should she do? [Hyatt Regency Hotel hallway collapse] (This is the basis of the Hyatt Regency Hotel hallway collapse in 1981.)

3. A construction engineer is concerned that the prefabricated bridge being put in place over a highway, using reliable construction procedures, should be halted because cables that suspended the bridge had loosened. What should she do? [Florida Bridge collapse] (This is the basis of the collapse of a Florida bridge being installed in 1981.)

4a. A structural engineer realizes (after seeing a report about it from an undergraduate thesis) that the skyscraper he helped design could collapse in strong winds, because the standard engineering design rules used to build it did not account for the unusual situation of it being built on stilts (on top of another building). What should he do? [Citicorp Building]

4b. This design flaw is thought to have occurred from an innocent mistake occurring in this unusual situation and not reckless (and so unethical) sloppiness. What do you think?

5a. The Chief Technology Officer at one of the two major airplane manufacturers learns that a process his company and their competitor use can lead to a safety flaw. What should he do?

5b. An engineer at one of the two major airplane manufacturers discovers that a process her competitor uses can lead to a safety flaw. What should she do?

6a. An organization has purchased a device and wants to operate it at a temperature of 31°F, and asks the manufacturer if this is possible. The manufacturer has tested a temperature-sensitive part in it down to 50°F. What should it do?

6b. An organization has purchased a device and wants to operate it at a temperature of 31°F, and asks the manufacturer if this is possible **and needs a response within hours**. The manufacturer has tested a temperature-sensitive part in it down to 50°F **and is warned by one of its engineers that the device should not be expected to work well at 31°F**. What should it do?

6c. An organization has purchased a device and wants to operate it at a temperature of 31°F, and asks the manufacturer if this is possible and needs a response within hours **because of political pressures---and it is known that it wants a positive answer**. The manufacturer has tested a temperature-sensitive part in it down to 50°F and is warned by

one its engineers that the device should not be expected to work well at 31°F, **and knows that lives could depend on its response.** What should it do? {This is the essence of the events leading to the space shuttle Challenger disaster. [Challenger]}

7. An engineer is told to install software in cars that will defeat federal emission tests, even when emissions are unacceptable during normal driving. What should he/she do? [Volkswagen]

8. An engineer understands that excessive pressure can come from managers who may not be engineers or scientist and who may not care, to make budgets, make deadlines, and political pressures and is experiencing it. What should she do? [Taylor]

9a. A car manufacturer wants to sell a safety feature as an option. What should it do?

9b. An airplane manufacturer wants to sell a safety feature as an option. What should it do? [Boeing, safety]

10. An engineer working is told to falsify quality data to enable the sale of substandard or potentially substandard aluminum, copper and powdered steel — used to make molded parts, like gears — to companies around the world. What should he do? [Kobe Steel]

11a. Somebody wonders whether he should use standard or fast set epoxy for anchor supports. What should he do?

11b. Somebody wonders whether she should use standard or fast set epoxy for anchor supports in building the Big Dig Tunnel in Boston, since the supplied spec (specification) sheet shows little difference between the two. What should she do? [Big Dig]

12a. An inspection team is concerned when it learns that an operating nuclear reactor was designed by those with engineering expertise in electronics without consulting engineers with nuclear expertise. What should it do? [Chernobyl]

12b. Upon learning that an operating nuclear reactor was designed by those with engineering expertise in electronics without consulting engineers with nuclear expertise, a member of the inspection team wonders whether this issue is really an ethical issue or just a mistake. What should he/she do? [Chernobyl]

13. A supplier of key switches to a major automobile manufacturer knows they are defective and could lead to accidents if not replaced with their corrected design, and is finding the manufacture is dragging its feet on announcing this problem and recalling sold cars to replace these switches. What should it do? [GM replacement switches]

14. An auto manufacturer does a calculation that shows that it would be cheaper to pay off law suits due to accidents caused by a faulty design feature that could easily be changed with a recall, but it would cost more to do so. What should it do? [Ford Pinto safety vs. cost calculation] (This is the essence of the famous and historic (mis)calculation of the safety vs. costs of the Ford Pinto.)

15a. A metallurgist was supposed to test steel for a Navy submarine, but objected to the Navy's policy of testing at -100F (-70C) because she thought it was stupid. What should she do?

15b. A metallurgist discovers that test cards for the metal to be used for a Navy submarine had been altered by another metallurgist. What should he do? [Faking metal test results]

Also, in whistleblowing

16a. A person overseeing the construction of a bridge learns that quite a few bolts used in construction are breaking when tightened. What should she do? [Cuomo/Tappan Zee Bridge construction]

16b. A person overseeing the construction of a bridge learns that quite a few bolts used in construction are breaking when tightened and her reports to management on this seem to be ignored. What should she do?

Also, in whistleblowing

17a. A company seeking even larger Air Force grants in the future agrees to build airplane brakes, but they overheated, and it decided not to change the design but instead falsify the test report, and later there was brake failure during a test flight. What should it do?

17b. An employee then accused the company of qualification test report falsification and ethical misconduct, to which the company replied "... we were not really lying. All we were doing was interpreting the figure the way we knew they should be. We were just exercising engineering license." What should the employee and company do? [B. F. Goodrich] (classic whistleblowing case)

*Industrial ethics - safety and chemical/waste handling*

1a. A U.S. engineer at his company's overseas pesticide factory overseas is concerned that the pesticide storage tanks have nonfunctioning tank leak alarms, poor backup systems, hold more than designed capacity, poorly installed water sprays and poor drainage, and more generally about unsafe conditions, such as low staff to save money and poor plans in case of disasters. What should he do?

1b. A U.S. engineer at his company's overseas pesticide factory overseas is concerned that the pesticide storage tanks have nonfunctioning tank leak alarms, poor backup systems, hold more than designed capacity, poorly installed water sprays and poor drainage, and more generally about unsafe conditions, such as low staff to save money and poor plans in case of disasters, and knows that other workers who had complained about codified safety violations had been reprimanded and at times fired.. What should he do? [Union Carbide, Bhopal 1984 pesticide disaster]

2. A major company decides to dump its PCBs into the Hudson River, and wonders whether or not it should any concerns about its ramifications. What should it do? [GE, PCBs, Hudson River]

3a. A company wonders how it should dispose of its waste chemicals, such as benzene, the pesticide lindane, polychlorinated dioxins, PCBs and phosphorus, responsibly. What should it do? [Love Canal]

3b. A company wonders how it should dispose of its waste chemicals, such as benzene, the pesticide lindane, polychlorinated dioxins, PCBs and phosphorus, and wonders whether it would be okay to dispose of them in a large sealed-off, impermeable region in a large hole. What should it do?

3c. A company disposes of its waste chemicals, such as benzene, the pesticide lindane, polychlorinated dioxins, PCBs and phosphorus, in a large sealed-off, impermeable region in a large hole that it now level land, and wants to sell this land to developers of schools and houses. What should it do?

3d. A company disposes of its waste chemicals, such as benzene, the pesticide lindane, polychlorinated dioxins, PCBs and phosphorus, in a large sealed-off, impermeable region in a large hole that it now level land, and is being forced to sell this land to the developers of schools and houses. What should it do?

4. After sulfuric acid leaks into a nearby river at a U.S. Army Pilot Plant facility, three civilian engineers wondered why they were indicted for a felony for these and related events because the plant's storage practices were legal, their job description didn't include responsibility for environmental rules, they were just chemical engineers practicing "good engineering sense", and they were just following usual procedures at the Pilot Plant. What should they do? [The Aberdeen Three] {This is a classic case.}

### *Industrial ethics – professionalism*

1. Someone at a company learns that the Chief Financial Officer at that company is recruiting someone in the government to her company while knowing that their company was negotiating with that person for a government (Pentagon) contract. What should he do? [Boeing, business dealings]

2. Someone at a company learns that their company is in possession of proprietary documents of a rival company. What should he do? [Boeing, business dealings]

3a. The Chief Technology Officer at one of the two major airplane manufacturers learns that a process his company and their competitor use can lead to a safety flaw. What should he do?

3b. An engineer at one of the two major airplane manufacturers discovers that a process her competitor uses can lead to a safety flaw. What should she do?

*Medical professional ethics*

1. A physician wants to disclose the problems of a patient (genetics or transmittable disease) to others, even if the patient won't permit disclosure, because the harm is big, at-risk relatives are identifiable, and the disease can be prevented or treated, and wonders if this is ethical. What should he/she do? [Disclosing a patient's genetics and transmissible disease]

2a. An athlete wants his healthy legs to be cut off and replaced with artificial prostheses so he could run faster in races, and the manufacturer wonders whether or not to sell him the prostheses. What should he/she do? [Athlete with healthy legs opting for leg replacement surgery]

2b. An athlete wants his healthy legs to be cut off and replaced with artificial prostheses so he could run faster in races, and the surgeon wonders whether or not to perform the surgery. What should he/she do?

3. A vendor wonders whether or not he/she should distribute fake vaccines, that are either highly diluted version of true vaccines or with innocuous substances as in placebos, because he/she would likely not get caught and would make a lot of money, and because the true vaccine could actually cause adverse reactions in some people and so he/she would actually be performing a public service. What should he/she do? [Fake vaccines]

4a. A manufacturer of a home video game that uses helmet gear to sense the player's responses (from the neocortex), wants to increase revenue by adding non-game related functionality (subliminal images) to the video that could be used for subliminal advertising of products, sensing consumer response to products, conducting of surveys of the person's interests and beliefs, and modifying how the user feels about specific products or issues, and knowing that such technologies are rapidly developing, wonders whether it would be right to do so. What should he/she do? [Brain privacy]

4b. Knowing this, a consumer watchdog wonders whether or not there should be rules in place to restrain such efforts and, if so, how should they be enforced? What should he/she do?

5a. A radiology resident is about to take a certification exam and wonders whether or not it would be right to review questions from previous years as recalled by previous test-takers, and wonders if this proper. What should he/she do?

5b. A radiology resident is about to take a certification exam and wonders whether or not it would be right to review questions from previous years as recalled by previous test-takers, and wonders if this proper because those who already took the exam signed a document agreeing not to share test material. What should he/she do?

5c. A radiology resident is about to take a certification exam and wonders whether or not it would be right to review questions from previous years as recalled by previous test-takers, and wonders if this proper because those who already took the exam signed a document agreeing not to share test material, but that this is widely ignored. What should he/she do? [Cheating on Certification Exams]

*Assorted professional ethics*

1a. A civil engineer is hired by the state to design a road between two cities and is considering two routes, Route 1 has a travel time of 2 hours and Route 2 is 20 minutes shorter, but would require tearing down a house that has been in a family for over a century, and the engineer learns that the family would not allow the state to purchase their house (for a very, very good price) and then tear it down, but the family would not sell at any price, and wonders if he/she should recommend to the state (i) only the longer Route 1, (ii) only the shorter Route 2 and to acquire the house by eminent domain (possibly by condemning the house), or (iii) both possibilities? [Tradeoffs in highway construction]

1b. In building the Cross Bronx Expressway, Robert Moses needed to raze many houses (as he had done using eminent domain many times before in many projects) and was told that if he moved part of the highway only a few blocks, the highway would still be as good, from all cost and transportation perspectives, but the character of the existing neighborhoods would be hurt much less. What should he have done? (What did he do?)

2a. After a city switches its water supply from that from a major city to that of a local river to reduce costs, residents start complaining about the water quality (color, taste, odor). What should it do? What should the residents do? [Flint's water crisis]

2b. After a city switches its water supply from that from a major city to that of a local river to reduce costs and residents start complaining about the water quality, it advises them to boil the water, but residents are still unhappy, especially after learning the water is said to corrode car parts and has more lead than allowed by the EPA. What should it do? What should the residents do?

2c. After a city switches its water supply from that from a major city to that of a local river to reduce costs and residents start complaining about the water quality, it advises them to boil the water, but residents are still unhappy, especially after learning the water is said to corrode car parts, has more lead than allowed by the EPA, and that the major city has offered to let it reconnect to the water supply for free. What should it do? What should the residents do?

2d. After a city switches its water supply from that from a major city to that of a local river to reduce costs and residents start complaining about the water quality, it advises them to boil the water, but residents are still unhappy, especially after learning the water is said to corrode car parts, has more lead than allowed by the EPA, and that the major

city has offered to let it reconnect to the water supply for free but the city has refused to do so? What should the residents do?

3a. An entrepreneur is facing ethical challenges in a startup. What should he/she do? [Startups]

3b. An entrepreneur wonders who owns the initial intellectual property, especially since part of it might be from his/her previous company? What should he/she do?

3c. An entrepreneur wonders who is really on the team and who gets the equity, and what happens when some on the initial team become less engaged? What should he/she do?

3d. An entrepreneur wonders whether or not it is expected and/or common to tell the funders and investors the whole truth about product development? What should he/she do?

3e. An entrepreneur wonders whether or not it is expected and/or common to tell the whole truth about delays and flaws in the product? What should he/she do?

3f. An entrepreneur wonders whether or not it is expected and/or common to tell the whole truth about earnings? What should he/she do?

3g. An entrepreneur wonders who owns the new products and data? What should he/she do?

### **References (specific to these cases; later References specific to general topics)**

[Alpha-Beta-Gamma] R. A. Alpher, H. Bethe, and G. Gamow, "The origin of chemical elements," *Phys. Rev.* 73, 803-804 (1948). This is the (supposedly humorous) example of the famous Alpha-Beta-Gamma publication; its history is described in the following three references (in which a scientist agreed to be added as the middle author to make the author list sound like Alpha-Beta-Gamma, at the suggestion of the true senior author and the apparent displeasure of the true junior author); S. Singh, *Big Bang: The Origin of the Universe*. New York: Harper Perennial, 2005. Excerpted [Online]. Available: <http://www.npr.org/templates/story/story.php?storyId=4505414>; S. L. Marateck, "Alpher, Bethe, Gamow," *Physics Today* 61, 11-12 (2008); J. D'Agnesse, "The last big bang man left standing," *Discover*, pp. 61–67, July 1999.

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[Athlete with healthy legs opting for leg replacement surgery]--- Workshop - Integrating professional issues into the technical curriculum: Teaching students about the challenge of

professionalism and ethics in an increasingly automated world living with sophisticated machines, Gotterbarn, D. ; Miller, K.W., IEEE Ethics 2014,  
[http://ieeexplore.ieee.org/xpl/mostRecentIssue.jsp?punumber=6883275&punumber%3D6883275%26sortType%3Dasc\\_p\\_Sequence%26filter%3DAND%28p\\_IS\\_Number%3A6893372%29%26pageNumber%3D4&pageNumber=1#](http://ieeexplore.ieee.org/xpl/mostRecentIssue.jsp?punumber=6883275&punumber%3D6883275%26sortType%3Dasc_p_Sequence%26filter%3DAND%28p_IS_Number%3A6893372%29%26pageNumber%3D4&pageNumber=1#)

[Being-A-Scientist] On Being A Scientist: Responsible Conduct In Research, 2nd ed. Washington. D.C.: The National Academy Press, 1995. [Online]. Available: <http://www.nap.edu/readingroom/books/obas/>; On Being A Scientist: Responsible Conduct In Research, 3rd ed. Washington. D.C.: The National Academy Press, 2009. [Online]. Available: [http://www.nap.edu/openbook.php?record\\_id=12192&page=R1](http://www.nap.edu/openbook.php?record_id=12192&page=R1)

[B. F. Goodrich] (classic whistleblowing case, whistleblower Kermit Vandivier) B.F. Goodrich Air Force A7-D Brake Problem Case And The Whistleblowing Debate  
<https://ethics.tamu.edu/wp-content/uploads/sites/7/2017/04/Goodrich.pdf>  
The Aircraft Brake Scandal  
<https://www.usna.edu/EE/ee353/GoodrichBrakeScandal/Goodrich%20Brake%20Fall%20C%20Homework.pdf>

[Bias, bounties in publishing] {Bounties for Publishing in High Impact Journals – Explicit and Implicit Effects} Cash bonuses for peer-reviewed papers go global By Alison Abris, 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 Shu  
<https://arxiv.org/ftp/arxiv/papers/1707/1707>.

[Bias, Jeng] M. Jeng, “A selected history of expectation bias in physics,” Am. J. Phys. 74, 578-583 (2006).

[Big Dig] Adapted from Engineering Ethics, Harris, Pritchard, and Rabins (On July 10, 2006, at least 26 tons of concrete from a ceiling panel fell on a car driving in the Big Dig Tunnel **killing a woman and injuring her husband**. Powers Fasteners, Inc. **was indicted for involuntary manslaughter for not disclosing that the Fast Set epoxy was subject to creep**, which allowed the support anchors to pull free, and should not be used for long-term tensile loads.)

[Boeing, business dealings]

**-Boeing Dismisses Two Executives For Violating Ethical Standards**

by J. LYNN LUNSFORD and ANNE MARIE SQUEO Staff Reporters of THE WALL STREET JOURNAL

Updated Nov. 25, 2003 8:26 a.m. ET

<http://online.wsj.com/articles/SB106968087463716900>

-NSU, Huizenga School of Business, Law and Ethics Classes

**Case Study: Boeing – Air Force Ethics Scandal** (Prepared by Prof. F. Cavico)

[http://www.huizenga.nova.edu/course-materials/6240/cases/Boeing\\_AirForceEthicsScandal.htm](http://www.huizenga.nova.edu/course-materials/6240/cases/Boeing_AirForceEthicsScandal.htm)  
**-Boeing Ethics Woes Take Toll on the Bottom Line**  
New York Times by LESLIE WAYNE  
Published: June 30, 2006 <http://www.nytimes.com/2006/06/30/business/30boeing.html>

[Boeing, safety] Engineering ethics  
**Doomed Boeing Jets Lacked 2 Safety Features That Company Sold Only as Extra**  
Hiroko Tabuchi and David Gelles March 21, 2019  
<https://www.nytimes.com/2019/03/21/business/boeing-safety-features-charge.html>  
**Boeing Didn't Advise Airlines, FAA That It Shut Off Warning System**  
By Andy Pasztor Updated April 28, 2019 7:20 p.m. ET  
<https://www.wsj.com/articles/boeings-enduring-puzzle-why-certain-safety-features-on-737-max-jets-were-turned-off-11556456400>  
**Boeing 737 Max Safety System Was Vetoed, Engineer Says**  
By Natalie Kitroeff, David Gelles and Jack Nicas  
Published Oct. 2, 2019 Updated Oct. 11, 2019  
<https://www.nytimes.com/2019/10/02/business/boeing-737-max-crashes.html>

[Brain privacy]---- App stores for the brain: Privacy & security in Brain-Computer Interfaces, Bonaci, T. ; Calo, R. ; Chizeck, H.J.IEEE Ethics 2014  
[http://ieeexplore.ieee.org/xpl/mostRecentIssue.jsp?punumber=6883275&punumber%3D6883275%26sortType%3Dasc\\_p\\_Sequence%26filter%3DAND%28p\\_IS\\_Number%3A6893372%29%26pageNumber%3D4&pageNumber=1#](http://ieeexplore.ieee.org/xpl/mostRecentIssue.jsp?punumber=6883275&punumber%3D6883275%26sortType%3Dasc_p_Sequence%26filter%3DAND%28p_IS_Number%3A6893372%29%26pageNumber%3D4&pageNumber=1#)

[Carroll] “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>

[Case] Online Ethics Center for Engineering, National Academy of Engineering [Online].  
Available: <http://onlineethics.org/>

[Certification-Exam-ing] S. Zamost, D. Griffin and A. Ansari, CNN, “Exclusive: Doctors cheated on exams” updated 1:20 PM EST, Friday January 13, 2012. [Online]. Available:  
[http://www.cnn.com/2012/01/13/health/prescription-for-cheating/index.html?hpt=he\\_c2](http://www.cnn.com/2012/01/13/health/prescription-for-cheating/index.html?hpt=he_c2)

[Challenger] Space Shuttle Challenger disaster  
[https://en.wikipedia.org/wiki/Space\\_Shuttle\\_Challenger\\_disaster](https://en.wikipedia.org/wiki/Space_Shuttle_Challenger_disaster)

[Cheating] Cheating in classes—including lab (apparently no longer available at <http://www.oberlin.edu/colrelat/ats/story/honorCode.html>) “In a CAI survey conducted during the 2001-02 academic year, 27 percent of students questioned said that falsifying laboratory data occurred "often or very often" on their campus. Forty-one percent said the same for plagiarism on written work, 30 percent for cheating during exams, and 60 percent for collaborating on assignments when the professor had instructed students to work alone. ... In addition, 55 percent of the students did not think that getting test questions and answers

from a student who had already taken an exam was serious cheating, and 45 percent said falsifying lab or research data was not serious cheating. Forty-one percent of students said they'd cut and pasted from the Internet without attribution, and only 27 percent said such cutting and pasting was serious cheating. And only 12 percent thought unpermitted collaborations on assignments qualified as serious cheating.” (CAI is Center for Academic Integrity <http://www.academicintegrity.org/index.php>)

D. J. Palazzo, Y.-J. Lee, R. Warnakulasooriya, D. E. Pritchard, “Patterns, correlates, and reduction of homework copying,” *Phys. Rev. ST Physics Ed. Research* 6, 010104 (2010);

L. Sanders, “Homework makes the grade, Class performance slipped for physics students who copied,” Web edition : Friday, March 26th, 2010. [Online].

Available:

[http://www.sciencenews.org/view/generic/id/57656/title/Homework\\_makes\\_the\\_grad](http://www.sciencenews.org/view/generic/id/57656/title/Homework_makes_the_grad);

T. Gabriel, “To Stop Cheats, Colleges Learn Their Trickery,” *New York Times*, July 5, 2010. [Online]. Available: <http://www.nytimes.com/2010/07/06/education/06cheat.html>

[Cheating on Certification Exams] **Exclusive: Doctors cheated on exams** By Scott Zamost, Drew Griffin and Azadeh Ansari, CNN, Fri January 13, 2012  
<https://www.cnn.com/2012/01/13/health/prescription-for-cheating/index.html> (Cheating on Certification Exams - Is this cheating?---Access to exams in previous years)

[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) | doi:10.1038/453275aews  
Feature

[Chernobyl] Adapted from Andrew Taylor, ME seminar, 9/19/14 and Wikipedia about the Chernobyl disaster

---- **Chernobyl Nuclear Power Plant, Ukraine – Unit 4 April 26, 1986**

- The explosion and fire released large quantities of radioactive particles into the atmosphere, which spread over much of the western USSR and Europe.
- The Chernobyl disaster was the worst nuclear power plant accident in history in terms of cost and casualties.
  - It and the Fukushima Daiichi nuclear disaster in 2011 are the only two classified as a level 7 event (the maximum classification) on the International Nuclear Event Scale.
  - **One Bottom-Line Analysis:** There was a sudden and unexpected power surge, and when an emergency shutdown was attempted, an exponentially larger spike in power output occurred, which led to a reactor vessel rupture at the seams and a series of steam explosions.
  - Those with an **engineering expertise in electronics had proceeded with the design without consulting engineers with nuclear expertise.**
  - They tested turbines, but knew nothing about nuclear reactors.

[Citicorp Building] Citicorp building

[http://www.slate.com/blogs/the\\_eye/2014/04/17/the\\_citicorp\\_tower\\_design\\_flaw\\_that\\_could\\_have\\_wiped\\_out\\_the\\_skyscraper.html](http://www.slate.com/blogs/the_eye/2014/04/17/the_citicorp_tower_design_flaw_that_could_have_wiped_out_the_skyscraper.html)

- **Unusual situation:** Built in 1977: 59 floors, with the lowest nine floors being stilts---to accommodate St. Peter’s Lutheran Church, which occupied one corner of the building site at 53rd St. & Lexington Ave.
- **Unusual design needed:** The stilts needed to be in the middle (not the corners), so chief structural engineer, William LeMessurier used a (light) chevron bracing structure for stability---and added a tuned mass damper to keep it stable in the wind.
- **Design error found:** In 1978 LeMessurier confirmed the claim of a (for some-time unknown) undergraduate architecture student that the building was particularly vulnerable to quartering winds (winds that strike the building at its corners). Normally, buildings are strongest at their corners, and it’s the perpendicular winds (winds that strike the building at its faces) that cause the greatest strain for a normal building. LeMessurier had accounted for the perpendicular winds, but not the quartering winds. He deduced that a storm strong enough to topple Citicorp Center hits NYC every 55 years if the damper worked and every 16 years if damper did not work due to loss of power during the storm.
- **Mistake rectification:** The building was fixed in secret, as Hurricane Elba threatened to hit NYC. Later, after seeing a BBC documentary on the Citicorp Center crisis, Diane Hartley, realized it was her undergraduate thesis that had averted a disaster.

[Cohen] R. Cohen, “The Ethicist: Hidden opinions,” the second story, New York Times Sunday Magazine, July 27, 2008. [Online]. Available:  
[http://www.nytimes.com/2008/07/27/magazine/27wwln-ethicist-t.html?\\_r=0](http://www.nytimes.com/2008/07/27/magazine/27wwln-ethicist-t.html?_r=0) (The author disagrees with the advice given in this article.)

[Court-Endorses-Tenure] “Court Endorses Value of Tenure” [Online]. Available:  
<http://www.aaup.org/AAUP/newsroom/Highlights/otero.htm>

[Credit-Antibiotic] P. Pringle, “Notebooks Shed Light on an Antibiotic’s Contested Discovery,” New York Times, June 11, 2012 [Online]. Available:  
<http://www.nytimes.com/2012/06/12/science/notebooks-shed-light-on-an-antibiotic-discovery-and-a-mentors-betrayal.html?ref=science>

[Cuomo/Tappan Zee Bridge construction] 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. BRENDA 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>

[Disclosing a patient’s genetics and transmissible disease] (The American Society of Human Genetics) ASHG STATEMENT Professional Disclosure of Familial Genetic Information The American Society of Human Genetics Social Issues Subcommittee on Familial Disclosure Am. J. Hum. Genet. 62:474–483, 1998  
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1376910/pdf/9537923.pdf> The ASHG agrees that disclosures may be ethical.

[Disclosing payments] “Top Sloan Kettering Cancer Doctor Resigns After Failing to Disclose Industry Ties” By Katie Thomas and Charles Ornstein Sept. 13, 2018  
<https://www.nytimes.com/2018/09/13/health/jose-baselga-cancer-memorial-sloan-kettering.html>

[Duke, Thomas, mistakes] “Document Claims Drug Makers Deceived a Top Medical Journal,” By Kati Thomas, New York Times, Wednesday, March 2, 2016 pages B1, B8

[Ethics] 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)

<https://en.wikipedia.org/wiki/Ethics#:~:text=Normative%20ethics%20is%20the%20study,ought%20to%20act%2C%20morally%20speaking.>

[https://en.wikipedia.org/wiki/Normative\\_ethics](https://en.wikipedia.org/wiki/Normative_ethics)

Lawrence Kohlberg’s stages of moral development

[https://en.wikipedia.org/wiki/Lawrence\\_Kohlberg%27s\\_stages\\_of\\_moral\\_development](https://en.wikipedia.org/wiki/Lawrence_Kohlberg%27s_stages_of_moral_development)

[Ex-SAC-Trader] M. Goldstein and A. Stevenson, “Ex-SAC Trader Was Expelled From Harvard Law School,” New York Times, January 9, 2014 [Online]. Available:  
[http://dealbook.nytimes.com/2014/01/09/ex-sac-trader-was-expelled-from-harvard-law-school/?ref=business&\\_r=0](http://dealbook.nytimes.com/2014/01/09/ex-sac-trader-was-expelled-from-harvard-law-school/?ref=business&_r=0)

[Fake vaccines] On TV (Law and Order) and in the Movies (The Third Man) Wikipedia

- “Law and Order” Season 15, Episode 14, Jan. 19, 2005: Sixteen people die from influenza after they received counterfeit flu vaccine shots.
- How does Exec. ADA Jack McCoy convince the jury that the Con Man who distributed the fake vaccine is guilty of manslaughter?
- By quoting black marketeer Harry Lime (Orson Welles) in the 1949 movie *The Third Man*, who greatly diluted penicillin he stole from military hospitals and sold it on the black market, killing many in post-WWII Vienna, where antibiotics were scarce, while speaking with Holly Martins at the top of Vienna’s Ferris wheel:
- Martins: Have you ever seen any of your victims?
- Harry Lime: ... Victims? Don't be melodramatic. Look down there. Tell me. Would you really feel any pity if one of those dots stopped moving forever? If I offered you twenty thousand pounds for every dot that stopped, would you really, old man, tell me to keep my money, or would you calculate how many dots you could afford to spare?

[Faked-Images] J. R. Young, “Journals find many images in research are fake,” Chronicle of Higher Education, June 6, 2008. [Online]. Available: <http://chronicle.com/weekly/v54/i39/39a00102.htm>

[Faking metal test results] – This is based on a true story. The accused metallurgist suggested that she falsified some test results because she believed the Navy's policy of testing at -100F (-70C) was "stupid."

-Woman Admits Faking Steel Strength Tests for U.S. Navy Submarines

BY DARRAGH ROCHE ON 11/9/21 AT 10:42 AM EST

<https://www.newsweek.com/woman-admits-faking-steel-strength-tests-u-s-navy-submarines-1647410-Metallurgist-gets-2.5-years-for-faking-steel-test-results-for-Navy-sub>

By Gene Johnson, The Associated Press

<https://www.navytimes.com/news/your-navy/2022/02/14/metallurgist-gets-25-years-for-faking-steel-test-results-for-navy-sub/>

[False-Credentials] (also see [Ex-SAC-Trader], [Kean-President]) N. Singer, “Duke scientist suspended over Rhodes scholar claims,” New York Times, July 20, 2010. [Online].

Available:

[http://www.nytimes.com/2010/07/21/health/research/21cancer.html?\\_r=1&pagewanted=print](http://www.nytimes.com/2010/07/21/health/research/21cancer.html?_r=1&pagewanted=print)

[Fermi] Story purportedly involving Enrico Fermi’s suggestion (to be updated).

[Feynman] R. Leighton and R. P. Feynman, Surely You're Joking, Mr. Feynman!: Adventures of a Curious Character. New York: W. W. Norton & Company, 1985, chapter on Cargo Cult Science, quote from pp. 341-342.

[Flint’s water crisis] **Events That Led to Flint Detroit’s Water Crisis**

- April 25, 2014: “The city switches its water supply from Detroit’s system to the Flint River ... as a cost-saving measure for the struggling ... city.” <http://www.nytimes.com/interactive/2016/01/21/us/flint-lead-water-timeline.html>
- Michigan judge tosses charges against former governor in Flint water crisis <https://www.reuters.com/legal/michigan-judge-tosses-charges-against-former-gov-snyder-flint-water-crisis-ap-2022-12-09/> Dec 9, 2022

[Florida Bridge collapse] Florida Bridge collapse 2018

<https://www.nytimes.com/2018/03/15/us/fiu-bridge-collapse.html> Florida Bridge

Collapses; at Least 6 Are Dead By PATRICIA MAZZEI, NICK

MADIGAN and ANEMONA HARTOCOLLIS MARCH 15, 2018

<https://www.nytimes.com/2018/03/17/us/florida-bridge-collapse-crack.html> By NICK MADIGAN, PATRICIA MAZZEI and CHRISTINA CARON MARCH 17, 2018

(as noted in the first article) - “The graceful pedestrian bridge was swung into place on Saturday. Heralded as a triumph of “accelerated construction,” the walkway would allow pedestrians to safely cross eight lanes of traffic separating the campus of Florida International University from the small city where many of the students lived. Five days later, around midday Thursday, the walkway collapsed in a pile of 950 tons of metal, concrete and dust, before ever opening to pedestrians. At least six people were

killed, according to the Miami-Dade County police. Some reports put the number of dead a high as 10. Accelerated construction is a well-regarded method of erecting bridges that avoids the long months of street closings when a structure is built over a road or river. Instead, parts of the bridge are prefabricated away from the site. For some bridges, including the one at F.I.U., the entire length is built before being lowered into place on its supports. Bridges made with the accelerated techniques are not more at risk of collapse than others, but moving them into place causes different stresses than what the bridge would normally have to withstand ... testing of the walkway had been underway on Thursday.

- ... the cables that suspended the bridge had loosened and that the engineering firm ordered that they be tightened. "They were being tightened when it collapsed today,""

[Ford Pinto safety vs. cost calculation] Adapted from Engineering Ethics, Harris, Pritchard, and Rabins In the classic case of safety vs. costs:

- In the late 1960's Ford rushed into production the subcompact Pinto (for 1971).
- Put gas tank between the rear axle and bumper. In a rear collision the tank could be punctured by exposed bolts. Failed testing at 21 mph, but Ford claimed it met then current federal safety standards.
- Could have placed the tank above the axle and used a rubber bladder in the tank.
- **Ford's analysis told them that improved designs were not cost efficient**, using NHSTA published estimated costs of death:
- Estimated "Benefits" to Ford (Costs of Damage): \$200 K for each of the 180 burn deaths + \$67 K for each of the 180 serious burn injuries + \$700 for each of the 2,100 burned vehicles
- = \$49.15 million potential costs due to safety consequences
- Estimated "Costs" to Ford (of Improvement to avoid tank explosions): \$11 for each of 11 million cars and 1.5 million light trucks
- = \$137 million costs needed to be added for better safety

Not only is this type of calculation considered totally unethical, but the lawsuits would result in so much higher costs now, and so the old conclusion would no longer apply.

[Fraud] (Scientific Reproducibility) (also see [Faked Images], [Fraud-At-NSF], [McCook], [Poehlman], [Polywater in Being-A-Scientist], [Sames], [Schön]) The Scientific Community's Response to Evidence of Fraudulent Publication: The Robert Slutsky Case, JAMA 272, 170-173 (1994), International Congress on Biomedical Peer Review and Scientific Publication [Online]. Available: [http://www.ama-assn.org/public/peer/7\\_13\\_94/pv3111x.htm](http://www.ama-assn.org/public/peer/7_13_94/pv3111x.htm); G. Weissmann, "Science fraud: From patchwork mouse to patchwork data," The FASEB Journal 20, 587-590 (2006) [Online]. Available: <http://www.fasebj.org/cgi/content/full/20/6/587>; S. E. Blau, "Panel Clears MIT Scientist of Fraud: Imanishi-Kari, Baltimore Vindicated," The Tech, Volume 116, Issue 28, Wednesday, June 26, 1996 [Online]. Available: <http://www-tech.mit.edu/V116/N28/baltimore.28n.html>; D. J. Kevles, "The Baltimore Case: A Trial of Politics, Science, and Character", W. W. Norton & Company, 1st edition (September, 1998); W. G. Schulz, "Weighing Reproducibility, Chemical and Engineering News, "Dec. 2006, Vol. 84, Number 49, pp. 75-77 [Online]. Available: <http://pubs.acs.org/isubscribe/journals/cen/84/i49/html/8449sci3.html>

[Fraud-At-NSF] J. Spencer, “Ex-NSF Engineer Admits to Fraud, Pocketing Thousands,” May 31, 2012, Clarendon-Courthouse-Rosslyn, VA Patch [Online]. Available: <http://clarendon.patch.com/articles/ex-nsf-engineer-admits-to-fraud-pocketing-thousands>, also see <http://www.justice.gov/opa/pr/2012/May/12-crm-690.html>

[Freeman] 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/>

[GE, PCBs, Hudson River] concerning GE Dumping PCBs into the Hudson River Wikipedia

- PCBs were widely used as dielectric and coolant fluids, for example in transformers, capacitors, and electric motors. General Electric manufacturing at discharged between 209,000–1,300,000 lb of polychlorinated biphenyl (PCBs) into the river from 1947 to 1977. The PCBs caused extensive contamination of fish in the river and accumulated in sediments at the river bottom.
- The Public Response: In 1966, Pete and Toshi Seeger founded Hudson River Sloop Clearwater, which in the 1970s to force a clean-up of PCB contamination of the Hudson caused by GE and other companies.
- The Government Response: In 1976 the New York State Department of Environmental Conservation banned all fishing in the Upper Hudson.
  - In 1977, PCBs were banned in the United States.
  - In 1983, the United States Environmental Protection Agency (EPA) declared a 200-mile (322-km) stretch of the river, from Hudson Falls to New York City, to be a Superfund site requiring cleanup. The dredging project is the most aggressive environmental effort ever proposed to clean up a river.
- GE Action: GE began sediment dredging operations to clean up the PCBs on May 15, 2009, costing GE ~\$460,000,000.
  - This Phase One was completed in October 2009, with the removal of ~300,000 cubic yards of contaminated sediment.
  - Phase Two, targeting ~2.4 million cubic yards of PCB-contaminated sediment began in June 2011 and will take ~5 to 7 years to complete.

[Gelman-Basboll] A. Gelman and T. Basboll, “To Throw Away Data: Plagiarism as a Statistical Crime” Am. Sci. 101, 168 (2013).

[Ghostwriting] N. Singer. “Senator Moves to Block Medical Ghostwriting,” New York Times, August 18, 2009 [Online]. Available: <http://www.nytimes.com/2009/08/19/health/research/19ethics.html>

[GM replacement switches] **G.M. Ordered a Half-Million Replacement Switches 2 Months Before Recall** New York Times by HILARY STOUT and BILL VLASIC NOV. 10, 2014 <https://www.nytimes.com/2014/11/11/business/gm-ordered-replacement-ignition-switches-months-before-recall.html>

- GM faces much litigation over the faulty switch. Delphi was in close contact with G.M. for years as engineers developed, and then tried to correct, the switch. “Delphi is refusing to participate in the cover-up,” said Robert C. Hilliard, one of three lead plaintiffs attorneys in federal multidistrict litigation against G.M. “They are fully and honestly disclosing what we have a right under the rules to know.”

[Gunsalus] C. K. Gunsalus, *The College Administrator's Survival Guide*, Cambridge, MA: Harvard University Press, 2006; C. K. Gunsalus, "How to blow the whistle and still have a career afterwards," *Science and Engineering Ethics* 4, 51-64, 75-94 (1998).

[Herman-Seminar] I. P. Herman, Presentation on “Research and Professional Ethics For All of Us” and the listing of “Mini-case Synopses.” [Online]. Available: <http://www.columbia.edu/~iph1/>

[Herman-Transactions] I. P. Herman, "Introducing Graduate and Undergraduate Students to Research and Professional Ethics at Columba University," I. P. Herman, 2014 IEEE International Symposium on Ethics in Science, Technology and Engineering (2014). Symposium: <http://ieeexplore.ieee.org/xpl/mostRecentIssue.jsp?punumber=6883275>, Paper: <http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=6893387>. doi: 10.1109/ETHICS.2014.6893387

[High Tc] In *The Trenches of Science* by James Gleick  
<https://www.nytimes.com/1987/08/16/magazine/in-the-trenches-of-science.html> A version of this article appears in print on August 16, 1987, on Page 6006029 of the National edition.

[HMS] *The Responsible Conduct of Research*, Discussion Materials, Division of Medical Sciences, Harvard Medical School, 2010-2011 (2010).

[Hotz] “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>

[Hyatt Regency Hotel Walkway Collapse] Hyatt Regency Hotel Walkway Collapse, 1981 Wikipedia The multistory atrium in the Kansas City Hyatt Regency Hotel was spanned by elevated walkways suspended from the ceiling, connecting the second, third and fourth floors between the north and south wings. While all were watching a dance competition on July 17, 1981, the fourth floor walkway (with 16-20 people) collapsed on the below second floor walkway (with ~40 people), which then fell to the atrium floor lobby. The hotel's sprinkler system had been severed by falling debris, flooding the lobby and putting trapped survivors at great risk of drowning during rescue operations. 114 died and 216 were injured. Construction difficulties had resulted in a flawed design change that doubled the load on the connection between the fourth floor walkway support beams and the tie rods carrying the weight of both walkways. This new design was barely adequate to support the dead load weight of the structure, much less the weight of people. It supported only 60% of the minimum load required by K.C. building codes. How did it happen? The Havens Steel

Company, the contractor responsible for manufacturing the rods, objected to the original plan of Jack D. Gillum and Associates. There were serious flaws of the revised design and poor communication between them. Gillum failed to review the initial design thoroughly, and accepted Havens' proposed plan without performing basic calculations that would have revealed its serious intrinsic flaws — in particular, the doubling of the load on the fourth-floor beams, and Gillum's preliminary sketches were interpreted by Havens as finalized drawings. At the time, it was the deadliest structural collapse in U.S. history (and was so until the collapse of the south tower of the World Trade Center in 2001).

[Ibsen, *Enemy of the People*]---1882 play and 1978 movie

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[Job applications-ChatGPT] “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>

[Karnik in ORI] **Case Summary: Karnik, Pratima** DEPARTMENT OF HEALTH AND HUMAN SERVICES Office of the Secretary Findings of Research Misconduct (had been at) <http://ori.hhs.gov/content/case-summary-karnik-pratima>  
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Office of Research Integrity Case: Karnik, Pratima  
<https://blogs.lt.vt.edu/highered5104/2013/09/22/office-of-research-integrity-case-karnik-pratima/>  
**Office of Research Integrity Takes Final Action Against Case Reserve Prof Lab Manager Aug. 12, 2013**<https://www.labmanager.com/news/office-of-research-integrity-takes-final-action-against-case-reserve-prof-14752>  
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[Kean-President] R. Pérez-Peña, “Split Board Backs Kean University’s Leader, Under Fire for Résumé,” *New York Times*, February 15, 2012 [Online]. Available: <http://www.nytimes.com/2012/02/16/nyregion/kean-universitys-trustees-back-its-president.html?pagewanted=all>; [http://www.nytimes.com/2012/02/16/nyregion/kean-universitys-trustees-back-its-president.html?\\_r=1&scp=1&sq=Kean%20University&st=cse](http://www.nytimes.com/2012/02/16/nyregion/kean-universitys-trustees-back-its-president.html?_r=1&scp=1&sq=Kean%20University&st=cse)

[Klosterman] <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.

[Kobe steel] “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>

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[Lehrer] Songs by Tom Lehrer, 1953. This is the clever Tom Lehrer satire “Lobachevsky” on how to plagiarize . (Advice on the need to plagiarize to become a success is supposedly given by the great mathematician Nikolai Ivanovich Lobachevsky; of note, Lehrer explained that Lobachevsky's name was used for prosodic reasons and was not intended to slur the character of the renown mathematician, see: Liner notes, The Tom Lehrer Collection, Shout! Factory, 2010. The decision to use the name of a real scientist of presumably high character could itself be the topic of an ethics discussion.)

[Love Canal] Adapted from Engineering Ethics, Harris, Pritchard, and Rabins; and Wikipedia - In 1942, the swimming hole “Love Canal” near Niagara Falls (a canal that had been started but not completed by William T. Love in the early 1890s) was bought by Hooker Chemical and Plastics (now part of Occidental Petroleum Co.). It lined it with cement and used it as a dump from 1942-50, dumping 21,000 tons of its waste chemicals, such as benzene, the pesticide lindane, polychlorinated dioxins, PCBs and phosphorus into it over an eight-year period. When it was filled they capped it with a cap that was impermeable to water, and leveled the land above it. It sold the now-level land to the community for \$1.00 in 1953, it claims under protest due to pressure by the community. An elementary school and houses were built on the site, and then complaints about the stored materials began when chemical waste was released by heavy rains. Love Canal became the “poster child” for waste dumps. New York State declared it a public health emergency in 1978, and relocated its residents. In settlements, Occidental paid \$94 M to NYS, \$129 M to the federal government, and >\$20 M to individual victims. It was cleaned up by NYS, which announced that cleanup was complete in 1994 and residents could return (enabled by a company renaming the area “Sunrise City”). (Returning to Love Canal is parodied in the movie Tootsie.)

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[ORI] Office of Research Integrity (ORI): Newsletter. [Online]. Available: <http://ori.hhs.gov/>

[Overviews] (also see [APS], [Being-A-Scientist], [Case], [Feynman], [Kovac], [Macrina], [ORI]) J. Kovac and B. P. Coppola, “Universities as moral communities,” *Soundings: An Interdisciplinary Journal* 83, 765-777 (2000);

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[Startups] **The Ethical Challenges Facing Entrepreneurs** – Wall Street Journal, Monday, November 23, 2015, pg. R1-R2. by Kirk O. Hanson <https://www.wsj.com/articles/the-ethical-challenges-facing-entrepreneurs-1448247600>

[Supporting information] **Make up Data for the Supporting Information** A Disturbing Note in a Recent SI File August 6th, 2013 <http://blog.chembark.com/2013/08/06/a-disturbing-note-in-a-recent-si-file/> (This site may not be operative---ChemBark Closing Down (Update: Not Really!) 1 APR 2013 BY DEREK LOWE---but ChemBark is now on Facebook.))

[Tacoma Narrows Bridge Collapse] Tacoma Narrows Bridge Collapse, 1940 Wikipedia This bridge was opened to traffic on July 1, 1940 (as the third largest suspension bridge in the world at the time, behind the Golden Gate Bridge and the George Washington Bridge). When windy, it oscillated vertically, during construction and after it opened. It collapsed on November 7, 1940, during 40 mph winds. This failure was due to aeroelastic flutter (dynamic instability of an elastic structure in a fluid flow, caused by positive feedback between the body's deflection and the force exerted by the fluid flow); sometimes more simply ascribed to the wind forcing a bridge resonance frequency. Was this inevitable given the technology at the time? No! The failure was due to not applying then standard engineering principles for wind on suspension bridge. The initial, engineering sound plans were replaced with a slimmer, more elegant, less expensive design, and less rigid design. This is known as the “Pearl Harbor of Engineering.”

[Taylor] Andrew Taylor, Engineering Ethics seminar given to Mechanical Engineering students at Columbia University, 9/19/14.

[TEM Images] Some VERY Suspicious TEM Images in Nano Letters August 14th, 2013 <http://blog.chembark.com/2013/08/14/some-very-suspicious-tem-images-in-nano-letters/>

[The Aberdeen Three] The Aberdeen Three, 1989 Adapted from Andrew Taylor, ME seminar, 9/19/14 and <http://ethics.tamu.edu/Portals/3/Case%20Studies/Aberdeen.pdf>

The Aberdeen Proving Ground – U.S. Army facility develops, tests, stores, and disposes of chemical weapons. In 1976, Congress passed the Resource Conservation and Recovery Act (RCRA) – regulated management of hazardous waste, including criminal fines for violations. Periodic inspection from 1983-1986 revealed serious problems at the “Pilot Plant” – toxic chemicals misplaced, unlabeled, poorly contained. External sulfuric acid tank leaked 200 gallons into a nearby river. Investigators came and found the chemical retaining dikes were unfit and containment was corroded and leaking chemical into the ground. Three civilian engineer managers (Gepp, Dee and Lentz) maintained:

The plant’s storage practices were legal

Their job description didn’t include responsibility for environmental rules

They were just chemical engineers practicing “good engineering sense”

They were just following usual procedures at the Pilot Plant.

They were indicted for criminal felony on June 28, 1988 and convicted – sentenced to 3 yr probation + 1000 h community service (max 15 yrs+750K)

The prosecutor said : “These are experts in their field. If they can’t be expected to enforce the law, then I’m not sure who can”.

[Tradeoffs in highway construction]-- Adapted from Engineering Ethics, Harris, Pritchard, and Rabins (Robert Moses proceeded as he wanted to do independent of community concern and the damage it could do to the fabric of the community (and in fact did to community.)

[TV show Bones] Television show “Bones”, Season 7, Episode 9, The Don't in the Do, originally aired April 16, 2012. This “Bones” episode described academic publishing in a very unrealistic manner, and was critiqued in detail in one of the cited references, including for suggesting that it was fine, and not a conflict of interest, for a supervisor to agree to review for a journal an independent manuscript submitted by her current lab assistant. Episode summary of television show “Bones”, Season 7, Episode 9, [Online]. Available: <http://www.poweredbyosteons.org/2012/04/bones-season-7-episode-9-review.html>  
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[TV show Death in Paradise] Death in Paradise (2013) Season 2, Episode 7, #15 overall, "A Stormy Occurrence", February 19, 2013.

[TV show House] Television show “House”, Season 2, Episode 18, Sleeping Dogs Lie, originally aired April 18, 2006. This “House” episode dealt with improper authorship, misuse of a colleague’s notes, and exceedingly poor and ludicrous senior leadership [this episode] and eventual conflict resolution among some of the concerned parties, in [the next reference] Television show “House”, Season 2, Episode 21, Euphoria, Part 2, originally aired May 3, 2006. [www.fox.com/house/recaps/218.htm](http://www.fox.com/house/recaps/218.htm)  
[www.televisionwithoutpity.com/articles/content/all1906/](http://www.televisionwithoutpity.com/articles/content/all1906/)

[TV show Leave it to Beaver, Plagiarism] Television show “Leave it to Beaver”, Season 2, Episode 1, Beaver's Poem, originally aired October 2, 1958.

[TV show Leave it to Beaver, Autobiography] “Beaver’s Autobiography,” Season 6 Episode 13, 1962.)

[Union Carbide, Bhopal 1984 pesticide disaster]

<http://www.redicecreations.com/article.php?id=13417>

The poison gas leaks from a Union Carbide Pesticide Factory in Bhopal, India in December, 1984 is often described as the worst industrial accident in history. The pesticide methyl isocyanate, or MIC, was released when water leaked into one of the storage tanks late on the night of Dec. 2, setting off the disaster. The main warning siren went off two hours after the leak began. The immediate death toll: 3,800 (by Union Carbide); 15,000 (by municipal workers). (Hundreds died in the stampede that followed the leak.) Thousands have died since, and an estimated 50,000 people became invalids or developed chronic respiratory conditions due to poisoning. Safeguards known to be substandard were ignored rather than fixed:

- Staffing at the plant had been cut to save money.
- Workers complaining about codified safety violations were reprimanded & at times fired.
- No plan existed for coping with a disaster of this magnitude.
- Tank leak alarms that would have alerted personnel hadn't functioned for at least 4 years.
- Other backup systems were either not functioning or nonexistent.
- Single backup system, unlike the four-stage system typically found in U.S. plants.
- Tank held 42 tons of MIC, well above the prescribed capacity; 27 tons likely escaped.
- Water sprays designed to dilute escaping gas were poorly installed & proved ineffective.  
     Damage known to exist to piping and valves had not been repaired or replaced,  
     because the cost was considered too high. Warnings from U.S. and Indian experts  
     about other shortcomings at the plant were similarly ignored.

[Volkswagen] “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/>

“VW Presentation in '06 Showed How to Foil Emissions Tests” 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>

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**General references** (including those above, there is much overlap in several of the below classifications, it is not exhaustive list) - see more detailed overviews of several of the below in the above citation listing and the viewgraphs in the ethics presentations

**General, Overviews, Teaching ethics, Basic ethics (more specific instances and examples are in below sections)**

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<http://www.onlineethics.org/>

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[Sherry's Secret] Sherry's Secret

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Adapted from **Engineering Ethics-Concepts and Cases** Charles E. Harris, Michael S. Pritchard, Michael J. Rabins, Ray James, Elaine Englehardt, 5<sup>th</sup> Edition-and previous editions, Wadsworth Cengage Learning (On July 10, 2006, at least 26 tons of concrete from a ceiling panel fell on a car driving in the Big Dig Tunnel **killing a woman and injuring her husband.**

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#### **Cheating in classes—including lab** (apparently no longer available at

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already taken an exam was serious cheating, and 45 percent said falsifying lab or research data was not serious cheating. Forty-one percent of students said they'd cut and pasted from the Internet without attribution, and only 27 percent said such cutting and pasting was serious cheating. And only 12 percent thought unpermitted collaborations on assignments qualified as serious cheating.” (CAI is Center for Academic Integrity  
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### **Conflicts of Interest**

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### **Ethics Codes**

#### **IEEE Code of Ethics**

<http://www.ieee.org/about/corporate/governance/p7-8.html>  
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[http://www.boeing.com/assets/pdf/companyoffices/aboutus/ethics/ethics\\_booklet.pdf](http://www.boeing.com/assets/pdf/companyoffices/aboutus/ethics/ethics_booklet.pdf)

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**Partnership on AI: Tenets**

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ACS

APS

***Evolving Ethics and Ethical Situations - AI and other emerging technologies, image manipulation, .... (see also bad data)***

**(Evolving) Codes of Ethics in Other Technical Areas:**

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Using ChatGPT and the like—in writing papers

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By Ann-Marie Alcántara Updated March 14, 2023 4:11 pm ET

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By Fernanda Zamudio-Suaréz APRIL 13, 2018

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**Columbia Fires 'Noose' 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  
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**Case Summary: Karnik, Pratima**

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Office of the Secretary Findings of Research Misconduct

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#### **Case Summary: Karnik, Pratima**

DEPARTMENT OF HEALTH AND HUMAN SERVICES

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#### **Professor admits faking AIDS vaccine to get \$19M in grants**

By Andy Soltis December 26, 2013

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

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---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.

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### **Professor admits faking AIDS vaccine to get \$19M in grants**

By Andy Soltis December 26, 2013

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Role at university still undefined

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### **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/>

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### **Misconduct accounts for the majority of retracted scientific publications**

Ferric C. Fang, R. Grant Steen, and Arturo Casadevall

PNAS October 16, 2012 109 (42) 17028-17033; <https://doi.org/10.1073/pnas.1212247109>

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### **Retractions of Publications**

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### **Cornell Review Finds Academic Misconduct by Food Researcher**

CANDICE CHOI September 20, 2018

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### **Faked Peer Reviews Prompt 64 Retractions**

By Ewen Callaway, Nature, 18 August 2015

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**Volume 92 Issue 10 | p. 34**

**Issue Date: March 10, 2014**

#### **Electro-Optics Paper Retracted**

Materials science paper fails to cite inventor of chromophores used in research

By Elizabeth K. Wilson

### **Tracking retractions as a window into the scientific process**

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### **Reviewing Papers**

**Television show “Bones”, Season 7, Episode 9, The Don't in the Do, originally aired April 16, 2012.** This “Bones” episode described academic publishing in a very unrealistic manner, and was critiqued in detail in one of the cited references, including for suggesting that it was fine, and not a conflict of interest, for a supervisor to agree to review for a journal an independent manuscript submitted by her current lab assistant. Episode summary of television show “Bones”, Season 7, Episode 9, [Online]. Available:

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By Ewen Callaway, Nature, 18 August 2015

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### **Safety**

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Wadsworth Cengage Learning (On July 10, 2006, at least 26 tons of concrete from a ceiling panel fell on a car driving in the Big Dig Tunnel **killing a woman and injuring her husband.** Powers Fasteners, Inc. **was indicted for involuntary manslaughter for not disclosing that the Fast Set epoxy was subject to creep,** which allowed the support anchors to pull free, and should not be used for long-term tensile loads.)

### **Kobe Steel Scandal Is Now Subject of Justice Department Inquiry**

By NEAL E. BOUDETTE OCT. 17, 2017

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### **Doomed Boeing Jets Lacked 2 Safety Features That Company Sold Only as Extra**

Hiroko Tabuchi and David Gelles March 21, 2019

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By Andy Pasztor Updated April 28, 2019 7:20 p.m. ET

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By Natalie Kitroeff, David Gelles and Jack Nicas

Published Oct. 2, 2019 Updated Oct. 11, 2019

<https://www.nytimes.com/2019/10/02/business/boeing-737-max-crashes.html>

**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>

### **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>

---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.

### **Concerning: GE Dumping PCBs into the Hudson River** Wikipedia

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### **Concerning: Citicorp building design mistake** (not bad ethics and not "excessively sloppy)

[http://www.slate.com/blogs/the\\_eye/2014/04/17/the\\_citicorp\\_tower\\_design\\_flaw\\_that\\_could\\_have\\_wiped\\_out\\_the\\_skyscraper.html](http://www.slate.com/blogs/the_eye/2014/04/17/the_citicorp_tower_design_flaw_that_could_have_wiped_out_the_skyscraper.html)

### **Concerning: Tacoma Narrows Bridge Collapse, 1940** Wikipedia

**Concerning: Love Canal** in **Engineering Ethics-Concepts and Cases** Charles E. Harris, Michael S. Pritchard, Michael J. Rabins, Ray James, Elaine Englehardt, 5<sup>th</sup> Edition-and previous editions, Wadsworth Cengage Learning; and Wikipedia , and parodied in the movie Tootsie.

**Concerning: Union Carbide, Bhopal 1984 pesticide disaster**  
<http://www.redicecreations.com/article.php?id=13417>

**Concerning: Hyatt Regency Hotel Walkway Collapse, 1981** Wikipedia

**Concerning: Florida Bridge collapse 2018** <https://www.nytimes.com/2018/03/15/us/fiu-bridge-collapse.html> Florida Bridge Collapses; at Least 6 Are Dead By PATRICIA MAZZEI, NICK MADIGAN and ANEMONA HARTOCOLLIS MARCH 15, 2018  
<https://www.nytimes.com/2018/03/17/us/florida-bridge-collapse-crack.html>  
By NICK MADIGAN, PATRICIA MAZZEI and CHRISTINA CARON MARCH 17, 2018

**Concerning Flint’s water crisis---- Events That Led to Flint Detroit’s Water Crisis**

- April 25, 2014: “The city switches its water supply from Detroit’s system to the Flint River ... as a cost-saving measure for the struggling ... city.

<http://www.nytimes.com/interactive/2016/01/21/us/flint-lead-water-timeline.html>

- Michigan judge tosses charges against former governor in Flint water crisis  
<https://www.reuters.com/legal/michigan-judge-tosses-charges-against-former-gov-snyder-flint-water-crisis-ap-2022-12-09/> Dec 9, 2022

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[https://en.wikipedia.org/wiki/Space\\_Shuttle\\_Challenger\\_disaster](https://en.wikipedia.org/wiki/Space_Shuttle_Challenger_disaster)

**(Update: Ex-astronaut says ‘toxic’ NASA hasn’t learned from fatal mistakes — and may lose space race to China**

By Charles Camarda

February 4, 2023 9:09am Updated

<https://nypost.com/2023/02/04/angry-ex-astronaut-details-the-problem-with-nasa>

Pinkus, R. L. B., et al. **Engineering Ethics: Balancing Cost, Schedule, and Risk - Lessons Learned from the Space Shuttle**. New York, NY: Cambridge University Press, 1997. ISBN: 0521437504.

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**G.M. Ordered a Half-Million Replacement Switches 2 Months Before Recall**

New York Times by HILARY STOUT and BILL VLASIC NOV. 10, 2014

[https://www.nytimes.com/2014/11/11/business/gm-ordered-replacement-ignition-switches-months-before-](https://www.nytimes.com/2014/11/11/business/gm-ordered-replacement-ignition-switches-months-before-recall.html?hpw&rref=business&action=click&pgtype=Homepage&module=well-region&region=bottom-well&WT.nav=bottom-well)

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**Concerning Ford Pinto safety vs. cost calculation**--Adapted from **Engineering Ethics- Concepts and Cases** Charles E. Harris, Michael S. Pritchard, Michael J. Rabins, Ray James, Elaine Englehardt, 5<sup>th</sup> Edition-and previous editions, Wadsworth Cengage Learning

**-Woman Admits Faking Steel Strength Tests for U.S. Navy Submarines**

BY DARRAGH ROCHE ON 11/9/21 AT 10:42 AM EST

<https://www.newsweek.com/woman-admits-faking-steel-strength-tests-u-s-navy-submarines-1647410>

**-Metallurgist gets 2.5 years for faking steel-test results for Navy subs**

By Gene Johnson, The Associated Press

<https://www.navytimes.com/news/your-navy/2022/02/14/metallurgist-gets-25-years-for-faking-steel-test-results-for-navy-subs/>

-----Faking metal test results – This is based on a true story. The accused metallurgist suggested that she falsified some test results over the course of decades, in part because she believed the Navy's policy of testing at -100F (-70C) was "stupid

**Teaching (see also cheating)**

**Concerning Buying instructor's books for a class**

<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.

--- xxxxxxxx*Is it ethical to require students to buy a book that you wrote? And Is it unethical to illegally download copyrighted instructional materials for use in my class?—ethics in teaching*

**Detecting and Preventing “Multiple-Account” Cheating in Massive Open Online Courses**

C.G. Northcutt, A.D. Ho, and I.L. Chuang <http://arxiv.org/ftp/arxiv/papers/1508/1508.05699.pdf>

**Patterns, correlates, and reduction of homework copying**

David J. Palazzo, Young-Jin Lee, Rasil Warnakulasooriya, and David E. Pritchard

Phys. Rev. ST Phys. Educ. Res. 6, 010104 – Published 18 March 2010; Errata Phys. Rev. ST Phys. Educ. Res. 6, 029901 (2010); Phys. Rev. ST Phys. Educ. Res. 6, 029902 (2010)

**-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>

**-More Rankings Rigging**

Inside Higher Ed June 8, 2009 By Scott Jaschik

<http://www.insidehighered.com/news/2009/06/08/usc#ixzz1tB3acAPV>

**-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>

## **Whistleblowing**

Ibsen, **Enemy of the People**---1882 play and 1978 movie

**Concerning** The classic whistleblowing case (B. F. Goodrich), whistleblower Kermit Vandivier

**B.F. Goodrich Air Force A7-D Brake Problem Case And The Whistleblowing Debate**

<https://ethics.tamu.edu/wp-content/uploads/sites/7/2017/04/Goodrich.pdf>

**The Aircraft Brake Scandal**

<https://www.usna.edu/EE/ee353/GoodrichBrakeScandal/Goodrich%20Brake%20Fall%20C%20Homework.pdf>

**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>

**Duke Whistleblower Gets More Than \$33 Million In Research Fraud Settlement**

Bill Chappell March 25, 2019 <https://www.npr.org/2019/03/25/706604033/duke-whistleblower-gets-more-than-33-million-in-research-fraud-settlement>

**The College Administrator's Survival Guide**, C. K. Gunsalus, Cambridge, MA: Harvard University Press, 2006; C. K. Gunsalus, "How to blow the whistle and still have a career afterwards," *Science and Engineering Ethics* 4, 51-64, 75-94 (1998).

## **Writing Papers, including proper authorship**

**Television show “House”, Season 2, Episode 18, Sleeping Dogs Lie, originally aired April 18, 2006.** This “House” episode dealt with improper authorship, misuse of a colleague’s notes, and exceedingly poor and ludicrous senior leadership [this episode] and eventual conflict resolution among some of the concerned parties, in [the next reference] **Television show “House”, Season 2, Episode 21, Euphoria, Part 2, originally aired May 3, 2006.**  
[www.fox.com/house/recaps/218.htm](http://www.fox.com/house/recaps/218.htm) [www.televisionwithoutpity.com/articles/content/all1906/](http://www.televisionwithoutpity.com/articles/content/all1906/)

**Television show “Leave it to Beaver”, Season 2, Episode 1, Beaver's Poem, originally aired October 2, 1958.** (plagiarism)

**Television show “Beaver’s Autobiography,” Season 6 Episode 13, 1962.** (proper content)

**Make up Data for the Supporting Information** A Disturbing Note in a Recent SI File August 6th, 2013 <http://blog.chembark.com/2013/08/06/a-disturbing-note-in-a-recent-si-file/> (This site may not be operative---ChemBark Closing Down (Update: Not Really!) 1 APR 2013 BY DEREK LOWE---but ChemBark is now on Facebook.))

**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>

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

**Cash bonuses for peer-reviewed papers go global** By Alison Abrisit, 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 Shu <https://arxiv.org/ftp/arxiv/papers/1707/1707>.

**???? Retracted Paper: Proper Authorship and Citation**

<http://cen.acs.org/articles/92/i10/Electro-Optics-Paper-Retracted.html>

**Volume 92 Issue 10 | p. 34**

**Issue Date: March 10, 2014**

**Electro-Optics Paper Retracted**

Materials science paper fails to cite inventor of chromophores used in research

By Elizabeth K. Wilson

**Big Bang: The Origin of the Universe.** S. Singh, New York: Harper Perennial, 2005. Excerpted [Online]. Available: <http://www.npr.org/templates/story/story.php?storyId=4505414>; S. L. Marateck, "Alpher, Bethe, Gamow," Physics Today 61, 11-12 (2008); J. D'Agnese, "**The last big bang man left standing**," Discover, pp. 61–67, July 1999.

These describe the (supposedly humorous) example of the famous Alpha-Beta-Gamma publication. ( R. A. Alpher, H. Bethe, and G. Gamow, "**The origin of chemical elements**," Phys. Rev. 73, 803-804 (1948

**Responsible Authorship**, by Caroline Whitbeck, The Online Ethics Center for Engineering and Science at Case Western Reserve University

[www.onlineethics.org/reseth/mod/auth.html](http://www.onlineethics.org/reseth/mod/auth.html)

**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) |

doi:10.1038/453275aews Feature

<https://www.buffalo.edu/content/dam/www/news/imported/pdf/May08/NatureChemistryPaperWithdrawn.pdf>

**“Senator Moves to Block Medical Ghostwriting,”** N. Singer, New York Times, August 18, 2009 [Online]. Available: <http://www.nytimes.com/2009/08/19/health/research/19ethics.html>

**“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>

**Computers and Software: Responsible Authorship,** by Caroline Whitbeck, Case: The Online Ethics Center for Engineering and Science at Case Western Reserve University  
<http://www.onlineethics.org/com/index.html>

**“John Wheeler, relativity, and quantum information”** Charles W. Misner, Kip S. Thorne, and Wojciech H. Zurek, Physics Today 62, 4, 40 (2009); <https://doi.org/10.1063/1.3120895>  
<https://www.its.caltech.edu/~kip/PubScans/VI-50.pdf>

#### **Use of Open Sources/Web Resources**

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