Ethics for Astronomers

March 17, 2014

“Intellectual Property”
(a.k.a. the muffin-top lecture)

READINGS:
Galileo
Bayh-Doyle Essays

Example of IP: Elaine's Muffin Tops

Why are astronomers concerned about IP?

- Common complaint: "So-and-so stole my idea."
- Student-Postdoc-Faculty-Mentor Relationships, labor mobility
- Scientist-Institution Relationships
- As with data management, IP has a central role in authorship disputes and collaboration
- IP and data management often two sides of the same coin.
- IP has tangible value ($$) → It is "property"
- Profit motives (tragedy of the anticommons), research program as a business, junior peers as employees

Case study

Winston is a postdoc and a PI on a Hubble program which surveys nearby stars for extrasolar planets and debris disks. One star yields the direct detection of an exosolar planet, but follow-up observations to further understand the physical nature of the planet can only be done with Hubble. The discovery is made in August, the paper is submitted in December, the AAS meeting is in January and the Hubble proposal deadline is in February. Winston would like to disseminate the scientific result as soon as possible, but worries that senior astronomers at other institutions would take the new discovery and compete directly with him for follow-up Hubble time. Winston decides to announce the discovery at the AAS meeting with the details concerning the mass and orbital properties of the planet, but does not give the identity of the star. A distinguished professor comes up to Winston afterwards and accuses him of behaving unethically for keeping the target a secret and delaying further scientific progress.

Has Winston engaged in the type of "undesireable conduct" discussed under research misconduct?

What are the costs and benefits of keeping the target a secret?

How would this balance change if Winston were a tenured professor?

Trade Secrets

(with thanks to Peter Menell, Boalt School of Law)

- Trade secrets are one of the oldest & most pervasive forms of intellectual property.
- A secret is not necessarily technological or creative, but it can be valuable.
- Definition (UTSA): "…information, including a **formula**, pattern, compilation, program, device, **method**, technique or process that:

  (1) derives independent economic value, actual or potential, and

  (2) is the subject of efforts that are reasonable under the circumstances to *maintain its secrecy*. **Duration**: until the information is disclosed.

- What do trade secrets have to do with science ethics?
  - Scientists use secrecy to prevent unfair competition while simultaneously attempting to disseminate scientific results (Galileo reading).
  - Secrecy interferes with the scientific method (e.g., protected targets, "who do you work for?", "the software is proprietary")
  - There is a category of unethical action which is to obtain a trade secret by unethical actions. But, as we will see, a lot of information is not "secret".

*Trade secrets do **not** include*

- Personal skill
- General knowledge (prior art)
- That which is readily ascertainable
- But gray areas: trade secrets do not necessarily have what copyrights have, which is written-down information.

Four elements to evaluate whether or not there is a secret

1. Information not generally known (prior art)
2. Information not readily ascertainable (availability, ease of reverse engineering, non obviousness)
3. Reasonable efforts to maintain secrecy (precautions, security, non-dislosures)
4. Commercial Value

If no secret, then some ethical problems go away…

What about Elaine's Muffin Tops?

What was the first case study in this course?

…ideas are all in the air…

International News Service vs. Associated Press
248 US 215 (1918)

- During WWI, AP would post news in kiosks in NYC, INS would copy information and send it to the West coast before AP could send it to the West coast
- Justice Brandeis (dissent) – Knowledge becomes "free as the air to common use" after voluntary disclosure.
- Justice Pitney (majority) – Unfair competition kills incentives.
- Justice Holmes - Key problem is that people think that INS produces the news, AP does not get the credit.
- Outcome: Doctrine of limited property right. **The proprietary period**.
- Sound familiar?

Case study: "Competition and the TAC" (C-Attac)

- Keck Observatory has commissioned a new instrument, and Tom, a new postdoc at UC Berkeley, wishes to submit a proposal to the NASA Telescope Allocation Committee to pursue a cutting edge science topic. His target list derives from one year of previous work analyzing of the 2MASS catalog, but he is concerned when he finds out that a competitor is a member of the NASA TAC. The competitor has a reputation for opportunism, and according to the Keck schedules, the competitor has 3-4 nights of observations scheduled per year through her own university that manages its own TAC for the telescope. Tom submits the proposal and three months later he is notified that it is rejected. Six months after that the competitor publishes a ground-breaking paper on exactly the same targets, based on data taken three months earlier, with exactly the same instrumental setup. Tom is furious, claiming that the idea from his proposal had been stolen.

1. What are the facts of the case? Does Tom have all the facts that he needs to make a case for unethical conduct? If not, what is missing?
2. Which parties may have acted unethically? Why (i.e. what principles, imperatives, standards or codes are possibly violated)?
3. What should Tom do? How might the other parties respond?
4. Is the scientific method damaged in cases like this?

C-Attac Take 2

• Tom's Keck target is not a secret (or else Tom would have a clear case against his competitor)

• A small community of specialists in the field, from all over the world, would be able to construct a science program identical to Tom's

• Tom's evidence is ultimately circumstantial: the target and method are knowable by others, but the timing is suspicious and the poor reputation of the competing scientist reinforces the suspicion of "undesirable conduct".

• From a purely legal perspective, there was no secret, and no intellectual property could therefore be stolen.

Unethical & Illegal Conduct: Misappropriation

- Improper means.
  - Break in, stealing, reverse engineering, etc.
  - Is mere deviousness improper?
- Breach of confidence (more common than improper means)
  - A confidential relationship is established in the following circmstances, and this can be implicit or expicit: **Express**: A person makes an express promise of confidentiality prior to the disclosure of the trade secret. **Implied**: the trade secret was disclosed to the person under circumstances in which the relationship between the parties justify the conclusion that at the time of disclosure the person knew tht the disclosure was intended to be in confidence AND the other party to the disclosure was reasonable in inferring that the person consented to an obligation of confidentiality (the law honors social norms).

Case study

- Elaine and her Muffin Top idea?
  - Did she attempt secrecy?
  - Did she present the idea with implied confidentiality?
  - Did she have a confidential relationship, e.g. employee of muffin shop?

- OK, she has no case. What now?

Paul Kalas (UC Berkeley 2015)

Tom the astronomer, what now?

- Collaboration, build constructively based on areas of expertise.
- Lay out in advance a plan for authorship in papers AND in press releases.
- Continue to share ideas, but build in express promises of confidentiality and/or collaboration from the start.

Homework

- Investigate various possible licenses available for software.
- Present the pros and cons of each.
- In your view, what would be an ideal combination of licensing terms for the original software that you write during the course of your scientific research?