Notes session 1

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John McHugh: we tolerate ‘bad science’

- HotSoS CFP: ‘describe in what ways their contribution constitutes science’
- Only one paper met these criteria, and its science was bad
- Bad: 6
  Decent: 3
  Decent / N/A: 1
  N/A: 4
- Anyone surprised?

Phil Koopman: criteria for ‘good science’

Daubert Criteria at US Civil Court (Daubert v. Merrell Dow Pharmaceuticals, Inc., 509 U.S. 579 (1993))

1. Theory or technique has been tested
2. Subject to peer review and publication
3. What is known/potential error rate?
4. Standards controlling method’s operation
5. Widespread scientific community acceptance

Criteria for ‘good science’ – in US court, all peer-reviewed papers are good science, including the papers from John’s study

observations about: CS community and ‘good science’

- Change over time:
  - Discipline traditionally driven by first-to-market development of technology
  - New emphasis on data, experimentation, new techniques
    - how big is the market for this work (are incentives aligned)?
    - how well equipped are we?
- Approach for improvement
  - Education: text books, educating ourselves
  - Set standards and expectations in research venues: PC members sign quality statement, structure of writing
  - Can Daubert Criteria be extended to judge good science in different areas?
  - What is the smartest, most constructive, approach to be successful fastest?

notes

- We tolerate work that is sub-par
- Is security special in experimentation (attacker), anything missing in set of methods?
- Publish data with papers
- How tolerant should we be
- Role of good insights or theories that are not scientifically verifiable
- Reporting of dead ends is important
- Realities of review practice: too much to review
- Can Daubert be extended to define ‘good science’ at levels of sophistication and purpose
- Important to publicly debunk bad papers (legal reasons)
- Deciding on bad science is a probabilistic statement
- Space domain: across disciplines we misjudge quality, not all medical or physics work is good
- Insurmountable opportunity
- A bar that is set to high is not helpful (Thomas Kuhn)
- Scientific value is only one of many concerns—same for other concerns like value for practitioners, blue-sky level, implementable, …