FOSTERING RESEARCH INTEGRITY IN A TURBULENT WORLD

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THE US EXPERIENCE

1. Origins of policy
2. Misplaced confidence in self-regulation
3. Regulatory response
The origins of policy

• Public disclosure of case of serious misconduct

• Reaction of the research community
  ✓ Surprise: events such as this are rare
  ✓ Confidence: science is self-correcting
  ✓ Assurance: we will correct the situation
  ✓ Rationalize: there will always be a few bad apples

• Reaction of the public/government
  ✓ Trust: agree to allow self-regulation take its course
  ✓ Skepticism: but new cases continue to be reported
  ✓ Impatience: how long will it take to deal with the problems
  ✓ Regulation: to protect our investment in research, you must….
US began with “patchwork mouse”

- William Summerline, Sloane Institute, 1974
- Response: Peter Medawar
  - I could not believe that this rabbit had received a graft of any kind . . . because the pattern of blood vessels in the ring around the cornea was in no way disturbed. Nevertheless I simply lacked the moral courage to say at the time that I thought we were the victims of a hoax or confidence trick.

- Outcome
  - Eventually caught
  - Reinforce notion that science was self correcting

- Research community did not understand or confront the issue of integrity in research
  - To some extent, still true today
Evidence of self-confidence

• Our analysis of deviant behavior and social control in science has turned up an interesting hypothesis, . . . that the greater the socially induced pressure for deviant behavior, the greater the likelihood that it will be detected. . . . The intense competition for making original scientific contributions, the "race for priority" and the peer recognition that comes with it created pressures for deviant behavior. . . . But that same intense competition as a system-property also focuses the attention of scientists on particular problems, intensifies their critical review of others' work in the field, and encourages efforts to check important new truth claims through replication. *This should increase the chances that any deviant behavior which does occur will be identified.* (Zuckerman, 1977, p. 131)
Common wrong assumptions

• 1981 Congressional testimony
  ✓ “The system succeeds in policing itself.” Philip Handler, NAS
  ✓ “[No regulation] is necessary, for the natural sciences contain ultimate correctives for any debasement of the knowledge derived from research.” NIH director Donald Frederick
  ✓ “The scientific community has a number of built-in controls, negative sanctions and positive rewards which are a constant reminder to scientists to adhere to rigorous standards” Patricia Wolff, Sociologist

• Researchers incorrectly assumed that:
  ✓ Misconduct is “rare”
  ✓ Science is self-correcting
  ✓ Overall standards for integrity in research were high
What happened?

1981, Congressional hearings, *Fraud in Biomedical Research*

1985, Second round of Congressional hearings

1986, NSF and OSI (ORI) definitions

1990, NIH/ADAMHA training requirement

1991, PHS Advisory Committee on Research Integrity

1992, NSA, *Responsible Science*

1995, Ryan Commission Report

1999, Reorganization of ORI

2000, OSTP Definition

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N Steneck, Fostering Research Integrity

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GLOBAL TURMOIL

1. Definitions
2. Scope
3. Response
1. Defining the problem

• US definition has narrowed over time:
  ✓ Initially recognized and discussed as “fraud”
  ✓ Narrowed to fabrication, falsification, plagiarism (FFP) and other practices that seriously deviation from the normal practice of science
  ✓ Further narrowed to FFP that seriously deviates from the normal practice of science
  ✓ Institutional policies add other elements

• Evaluation:
  ✓ Advantage: Focuses action on most serious cases
  ✓ Weakness: Ignores wide range of misbehavior that negatively impacts research

• Future of definition in flux
Definitions are changing

• Canada & Australia adopting a different approach
  - Describe best practice
  - Define misconduct as a breach of best practice
    • Serious cases must be reported to funding agencies
    • Lesser misconduct handled by institutions
  - Enforce through “memorandum of understanding”
• Public still thinks in terms of fraud
European and global situation confusing

- No Europe-wide definitions:
  - European Commission has not addressed
  - Unlikely will be addressed in Horizon 2020

- Global situation is no better:
  - World Conferences → Singapore Statement
  - Global Research Forum → sticking with narrow definition

- Concerns:
  - Research is now global; definitions must be global
  - Basic problem that needs to be addressed has not be defined
Practical Implications

- Definition determines focus of activities for institutions:
  - FFP ~ 1-10 cases
  - QRP ~ 100s of cases
  - Highest standards ~ 1,000s of cases

- **Question**: what problems should to be addressed?
#2: Scope of problem

• Is changing in three ways:
  1. More countries
  2. Wider range of misbehaviors considered
  3. Cases in fields previously ignored, especially social sciences

• First assumptions:
  ✓ Misconduct is rare
  ✓ Most common in highly competitive fields such as biomedicine
  ✓ Otherwise, standards for integrity in research are high

• These assumptions are no longer accurate!

• Examples
Misconduct is now global

- Yoshitaka Fujii
- Japan, Toho University
- Field: Anesthesiology
- Misconduct: 193 publications suspected of fabrication and violation of ethics rules; 183 retracted to date
- Impact:
  - Pressure on editors & universities to do something
  - Retraction is costly
- Question: How can 183 fabricated publications make it through the peer review process?
Europe is not immune

• Diederik Stapel
• Netherlands
• Social psychology
• Falsified evidence in studies over many years
• Lost position, students and colleagues have retracted papers
• 51 papers retracted to date

• Consequence: “Reproducibility Project” and other efforts to test whether research can be replicated
New cases broaden scope

The discovery that the Dutch researcher Diederik A. Stapel made up the data for dozens of research papers has shaken up the social psychology, fueling a discussion not just about outright fraud, but also about subtler ways of misusing research data. Such misuse can happen even unintentionally, as researchers try to make a splash with their peers—and a splash, maybe, with the news media, too. (Chronicle of Higher Education, emphasis added)
Stakes are increasing

- Craig B. Thompson
- US, Sloan-Kettering Cancer Center
- Cancer treatment
- Took data from former employer (University of Pennsylvania) without permission
- $1,000,000,000 law suit
- Suit settled out of court, terms no revealed

“The lawsuits essentially accused Dr. Craig B. Thompson, who worked at the University of Pennsylvania before becoming president of Sloan-Kettering in 2010, of hiding his use of the research he conducted at Penn to help start Agios.” (New York Times 31 Aug 2012)
Level of scrutiny increasing

- Ulrich Lichtenthaler
- Mannheim University
- Management Studies
- Case is in process
  - 9 articles retracted of over 80 articles published
  - Issues:
    - Duplicated publication, i.e. failure to site similar prior publications
    - Misused of statistical significance
    - Data manipulation (different conclusions from same data set)
    - Salami publication
Impacts all research

• Comments on Retraction Watch:
  ✓ Out of curiosity, I just perused the paper *The Impact of* ..... When you look at the regression output they report, you can fairly easily see that SE’s and coefficients don’t add up to the reported significance levels. I ran these through a p-value calculator, and found the following:
  ✓ If the entire Journal of Management Studies was filled with cooked data from cover to cover:
    • A. Would anybody be able to tell the difference?
    • B. Would anybody care?
  ✓ Well I hope I am not being overly cynical here, but these types of journals are essentially vanity publications – places for academic non-managers to justify their academic position and perks.

• How does the public know which research it reliable / has integrity?
#3: Response

- FC Fanga et al., “Misconduct accounts for the majority of retracted scientific publications,” PNAS 1 October 2012 (online).
  - Prior studies, most retractions due to error
  - New evidence, 67% due to misconduct
  - Evidence of misconduct in the public record
- Why have editors /employers allowed this to happen?
- Growth in individuals looking for problems
Plagiarism & Duplicate Publication

• Deja Vu / eTBLAST
  ✓ Identifies similar text
  ✓ Primarily titles and abstracts
  ✓ Manual verification of suspicions

• Results:
  ✓ ~81,000 matches
  ✓ ~2,000 verified
  ✓ ~79,000 unverified

• eTBLAST team now studying duplicate funding

• Question. Have universities taken this evidence seriously? Is there a cover up?
Steps to turn turbulence into RCR

1. Evaluate, organize and publicize policies:
   ✓ Are they accessible and understandable to researchers?
   ✓ Can they be enforced?
   ✓ Are they consistent with national and international policies?

2. Implement/improve training:
   ✓ Are researchers aware of their responsibilities?
   ✓ Are resources used efficiently to provide training

3. Evaluate research climates:
   ✓ Are researchers motivated to set high standards for integrity in research?
   ✓ Will researchers report their concerns about irresponsible behavior?
   ✓ Does your institution avoid or deal with potential problems?

4. Is commitment to high standards for integrity in research in principle or in practice?
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For further information