ETHICAL DIMENSIONS OF PRODUCING AND USING EVIDENCE TO INFORM POLICY IN A WORLD OF EVER-EXPANDING ENVIRONMENTAL HEALTH INEQUALITIES

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THANK YOU!

Taiwan Ecological Stewardship Association

AT WHOSE KIND INVITATION I AM VISITING TAIWAN

- *Nancy Tzu-Mei Chen*
- *Yuping Chen*
- ----------

And to

Po-Chin Huang

for hosting my March 25 2016 visit to

National Health Research Institutes

Miaoli County

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ACKNOWLEDGMENT AND DISCLOSURE

No financial conflict-of-interest is declared.

Note:

- ***I strive for professional service in the public interest and have served as an expert witness in litigation on behalf of plaintiffs in the past, monies from which generally went into a University-managed research account;*** AND
- ***As a professional legacy, I have been bankrolling the IJPC-SE as a voluntary professional society for the past three years, hoping that it will become self-sustaining and enduring from April 2016.***

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EPIDEMIOLOGY

As defined in *The Dictionary of Epidemiology*, we study a health problem with a view to applying the knowledge gained to control the problem.

→ The logical upstream determinant of control *per se* lies in well-formulated, evidence-based policy. Epidemiology is the science that informs policy … by bridging toxicology to human health.

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YET, HOW WELL DO WE TRANSLATE OUR KNOWLEDGE IN THE PRESENCE OF UNCERTAINTY?

AND WHAT ACCOUNTS FOR THE DEGREE OF UNCERTAINTY?

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WHILE EPIDEMIOLOGISTS DO THEIR RESEARCH

- **Who takes the risks while who derives the benefits?**
- **Does the burden of proof of safety lie on the proponent of a new product, or on John and Jane Public?**

HILL CONCLUDES … (1965)

"All Scientific work is incomplete – whether it be observational or experimental.

All scientific work is liable to be upset or modified by advancing knowledge.

That does not confer upon us a freedom to ignore the knowledge we already have, or to postpone the action that it appears to demand at a given time."

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WORKING AT THE NEXUS OF RESEARCH AND POLICY

There are many forces, or drivers, at play in working to inform policy in order to maintain and improve population health.

- **"Ideology" is one class of such drivers.**
- **"Financial conflicting interests" is another class.**
- **Both are integral to our personal contextual narratives (i.e., the dominant paradigm that defines the story of our lives … that which gives meaning to us as individuals in society).**

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AND THEN THERE IS THE APPLICATION OF OUR SCIENCE, WITH ITS VARIOUS PARADIGMS, THAT OPERATES WITHIN THESE DRIVERS

Consider two paradigms available to us in environmental epidemiology:

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NEWTONIAN VS. COMPLEXITY PARADIGMS

Reductionism vs. Holism

Predictability vs. unpredictability

Linear vs. non-linear

Uncertainties acknowledged

Deterministic vs. non-deterministic

System equilibrium vs. instability

Newtonian assumptions hardly ever apply in the real world. "Newtonian" tends to be quantitative, and "Complexity" is addressed more qualitatively.

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PROFESSIONAL INTEGRITY / ETHICS / MORALITY / LAW:

- **The defining influences in our behaviour / conduct / choices as people … and as research scientists … is the social context in which we live, work and play.**

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EPIDEMIOLOGY AS AN APPLIED SCIENCE

Because it is possible to manipulate experimental and control groups in ways that introduce bias and thus fail to serve the public interest through the pursuit of truth (as expected of scientists), it is more and more recognized that ethical training and oversight are crucial.

Our ethics and values determine in large part our behaviours and the choices we make.

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BIASES COUNTER TO THE PUBLIC INTEREST

- **Publication Bias**
- **Suppression Bias**
- **Repression Bias**
- **Funding Bias**

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FIRST,
A REALITY CHECK …

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EXAMPLES OF MISCONDUCT AND DISHONESTY FROM THE BASIC AND PHYSICAL SCIENCES

- **Ptolemy who took the credit from another Greek astronomer, Hipparchus**
- **Galileo, father of empiricism, whose experiments defied replication**
- **Newton who, from his lofty seat as president of the Royal Society, accused Leibniz of plagiary while doctoring supporting measurements to make his own Principia more persuasive**

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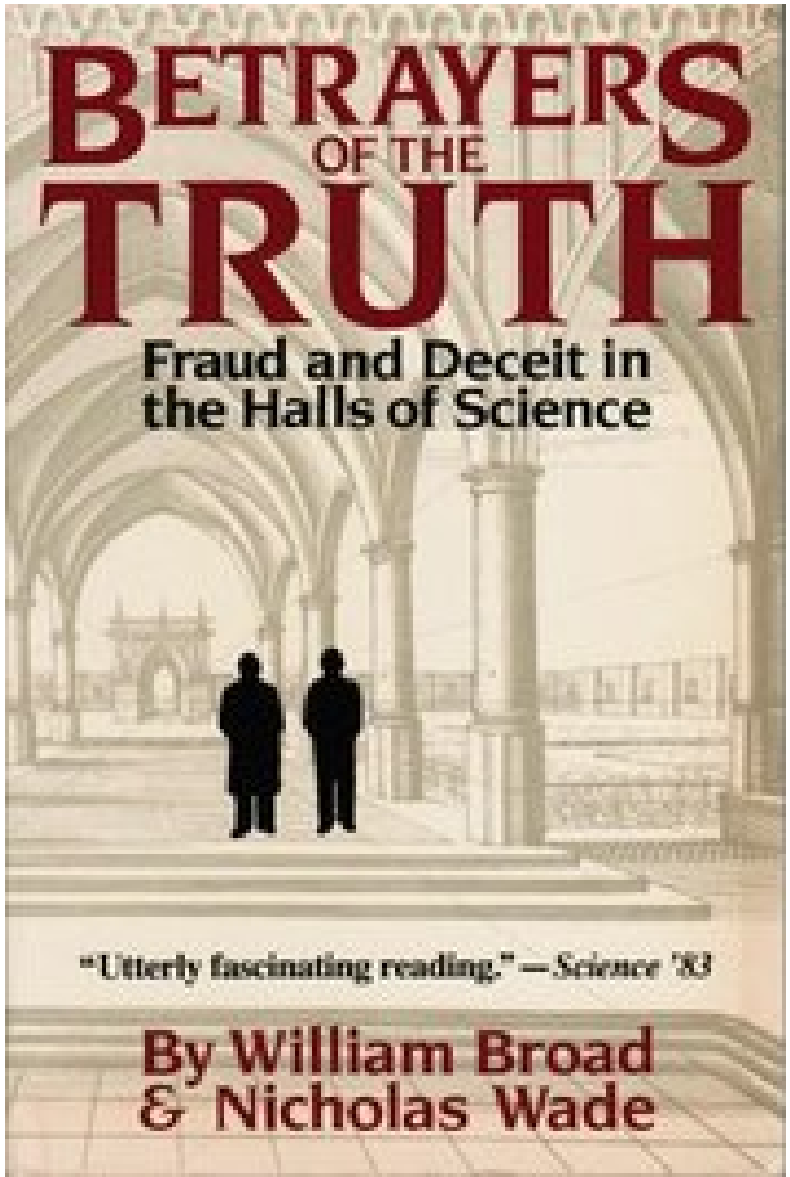
IN 1982 … EXAMPLES … FROM GALILEO AND MANY MORE



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The book argues that the conventional wisdom that science is a strictly logical process, with objectivity the essence of scientists' attitudes, errors being speedily corrected by rigorous peer scrutiny and replication, is a mythical ideal.

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NATIONAL ACADEMY OF SCIENCES, WASH., DC (1992)

RESPONSIBLE SCIENCE: ENSURING THE INTEGRITY OF THE RESEARCH PROCESS

- **PANEL ON SCIENTIFIC RESPONSIBILITY AND THE CONDUCT OF RESEARCH**
- **COMMITTEE ON SCIENCE, ENGINEERING, AND PUBLIC POLICY**

"THE RIGHT TO SEARCH FOR TRUTH IMPLIES ALSO A DUTY; ONE MUST NOT CONCEAL ANY PART OF WHAT ONE HAS RECOGNIZED TO BE TRUE"

– ALBERT EINSTEIN

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A MINORITY STATEMENT

1. **Unbalanced treatment of scientists and institutions, failing to convey the overriding importance of intellectual freedom and trust in the creative process.**
2. **Equivocal in defining misconduct in science.**
3. **Does not stress sufficiently the importance of establishing a regularized institutional "response pathway" for allegations of misconduct. Conflict of interest directly related to research can be more complex, potentially more serious and perhaps more numerous than the examples of fabrication, falsification, and plagiarism.**

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ETHICAL CHALLENGES TO RISK SCIENTISTS: AN EXPLORATORY ANALYSIS OF SURVEY DATA, 1994

Greenberg M and Goldberg L

Surveys of almost 1,500 members of three professional societies that do risk analysis (e.g. environmental economics, epidemiology, exposure assessment, industrial hygiene, toxicology) found that 3 in 10 respondents had observed a biased research design, 2 in 10 had observed plagiarism, and 1 in 10 observed data fabrication or falsification.

DANIELE FANELLI , 2009

How Many Scientists Fabricate and Falsify Research? A Systematic Review and Meta-Analysis of Survey Data

This is the first meta-analysis of surveys asking scientists about their experiences of misconduct. It found that, on average, about 2% of scientists admitted to have fabricated, falsified or modified data or results at least once … and up to one-third admitted a variety of other questionable research practices including “dropping data points based on a gut feeling”, and “changing the design, methodology or results of a study in response to pressures from a funding source”. In surveys on the behaviour of colleagues, questionable practices were reported in up to 72%.

THE NORMAL RANGE OF HUMAN CONDUCT

POWER CORRUPTS. ABSOLUTE POWER CORRUPTS ABSOLUTELY!

(Lord Acton's premise)

NO ONE IS IMMUNE!

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THE ROLE OF ANY PROFESSIONAL SOCIETY

TO SERVE AS A TRANSPARENT VOICE FOR ADVANCING THE DISCIPLINE BY PROVIDING A FORUM TO KEEP OUR HOUSE IN ORDER BY:

- **Facilitating networking to maximize engagement at multiple levels and scales in the public interest**
- **Fostering the development of uni-, multi- and trans-disciplinary research methods**
- **Maximizing personal and professional integrity in both research and practice by setting normative standards for ethics, peer over-site, and accountability**
- **Providing a public face**

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PROFESSIONAL SOCIETY CORE VALUES & MISSION STATEMENTS

- **They provide the anchor for our activity and collective motivation**
- **In EPIDEMIOLOGY, one aspect is to:**

… maintain, enhance, and promote health in communities worldwide … work to protect the public health interest above any other interest …

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WHY ETHICS IN THE PROFESSIONS?

- **Keep ourselves on track and keep our house in order**
- **Socialize our students**
- **Professional accountability**
  - **According to norms of behaviour**

And, while we do our research

- **IN WHOSE BEST INTERESTS?**
  WHO IS TAKING THE RISKS?
  WHO IS DERIVING THE BENEFITS?

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All sorts of pressures operate on the applied health scientist … and have implications in the policy realm

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SCIENCE IS BUT ONE SUCH PRESSURE ON POLICY-MAKERS

→ HUMILITY AND EMPATHY FOR THE POLICY-MAKER

… Our job in science is to do the best possible science …

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→ **There are many**
competing interests
in the work done by
epidemiologists

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PERVASIVE INFLUENCES AND PRESSURES ON SCIENTISTS

- **From funding sources to peer review**
- **From the questions we ask through access to data**
- **From study design to data analysis and interpretation**
- **From dissemination to job security**

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TO UNDERSTAND INFLUENCE AND ITS IMPACT WE MUST UNDERSTAND

- **The Dominant Paradigm**
- **The Contextual Narrative**
- **The Role of Impartial Science in the Public Interest**

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THE FUNDAMENTAL PRINCIPLES OF BIOETHICS INCLUDE

RESPECT FOR AUTONOMY

- Requires respect for individual rights and freedoms (Also: Veracity & Fidelity)

BENEFICENCE

- Requires doing good / Consider consequences of interventions in people's lives

NON-MALEFICENCE

- Requires doing no harm

SOCIAL AND DISTRIBUTIVE JUSTICE

- Requires fair and equitable allocation (of risks & benefits) to all without discrimination

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THE FUNDAMENTAL PRINCIPLES OF BIOETHICS (UNDER JUSTICE) INCLUDE

ENVIRONMENTAL JUSTICE PRINCIPLE

- *Who is taking the risks?*
- *Who is deriving the benefits?*

THE POLLUTER PAYS PRINCIPLE

Incentives to internalize costs

THE PRECAUTIONARY PRINCIPLE

Act to prevent, even if evidence is limited

THE SEVENTH GENERATION PRINCIPLE

Consequences seven generations hence

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PRIMARY PRINCIPLES IN PUBLIC HEALTH

Protect the most vulnerable in society (e.g., unborn, children, Inuit, frail elderly) - **beneficence**

Involve communities in our research (ensure community relevance of our work) - **autonomy**

Integrity in Public Health (serve the public health interest above any other interest) - **beneficence and non-maleficence**

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WHAT ARE WE UP AGAINST, GIVEN THESE PRINCIPLES?

What creates/drives misconduct in science?

What tempts scientists away from the pursuit of truth?

How does misconduct derail scientific discourse?

How does misconduct influence public policy and hence population and global environmental health?

Confrontation, and the challenge of speaking truth to power!

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NOW, IN PRACTICE ...

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“Industry’s offensive against the regulation of health and safety hazards uses academics to downplay or deny the seriousness of the hazards...”

Clayson and Halpern

J. of Public Health Policy

September, 1983

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THE FOUR D'S APPLIED TO SCIENTISTS STUDYING THAT WHICH DOES NOT SUPPORT THE *STATUS QUO*

- **Deny**
- **Delay**
- **Divide**
- **Discredit**
  - ➢ **[Dismiss]**

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WE MUST NOT BE NAÏVE

Be aware of forces at play that influence both science and policy.

… Great vigilance and personal integrity are required to counter the influence of financially interested parties and corrupt / morally bankrupt governments.

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RELENTLESS PRESSURE FROM VESTED INTERESTS

- **Manoeuver their way onto review panels, influence Boards of our professional associations, and infiltrate the literature with junk science**

- **Expert witness tensions arise between the plaintiff and defence sides of the argument in tort actions where the rubber hits the road concerning policy decisions**

- **David vs Goliath?**

- **Current major initiative of the IJPC-SE is its Working Group on *Conflict-of-Interest and Disclosure***

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IJPC-SE AND ITS MISSION:

- **Volunteer-driven, not-for-profit consortium, currently comprising 19 national and international member-professional societies/associations**

- **Impartially generate, report and apply epidemiological methods to the formulation, implementation and evaluation of evidence for use in informing health policy**

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IJPC-SE GOAL & APPROACH

- **Goal is to serve the public interest by informing health policy and related areas of endeavour through its work at the nexus of research and policy**
- **Coordinates inter-professional society activities that are related to research and practice in the generation of evidence, as well as in evidence-based policy application, formulation, implementation and evaluation**
- **Promotes epidemiological best practices to inform policy**

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THANK YOU FOR YOUR ATTENTION

www.ijpc-se.org

www.colinsoskolne.com

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