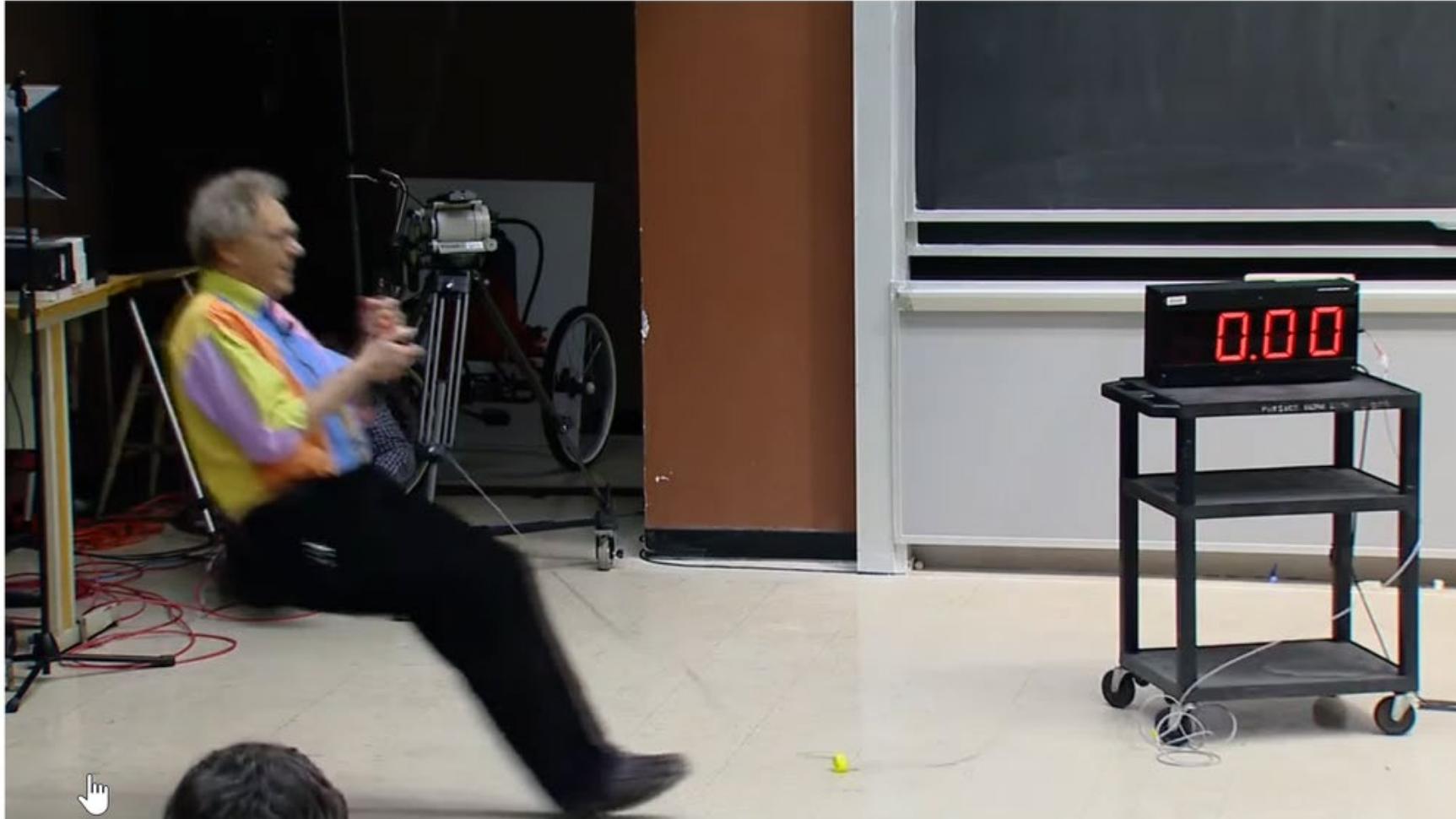


REPEATABLE, VERIFIABLE, UNBIASED EXPERIMENTS- Walter Lewin



For the Love of Physics (Walter Lewin's Last Lecture)



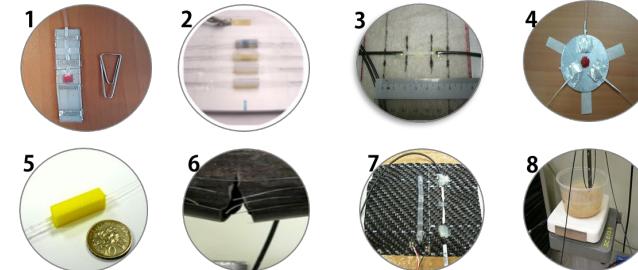
One of my favorite
teachers of math
and physics !

To view complete
lecture, type [Walter
Lewin's Last Lecture](#)
in YouTube

Typical process academic research or project


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Worthy Idea



Publication

You start with this

The Internet as a source of ideas, useful to trigger new ideas, to borrow and combine others ideas, but sometimes, people just steal the ideas (claim as yours), no crediting of base intellectual property. Where do ideas come from anyway?

You test out your idea

Plan out fair experiments which could be repeated and validated by others to confirm veracity of scientific method used. Investigation should be systematic and abide by standards or codes, where available. How to ensure impartial, unbiased tests?

You publish your results

Accurate and honest reporting. Beware of dishonesty in reporting such as Fabrication, Falsification and Plagiarism. Authorship list, gift authorship, Related issues: Peer review process, fraudulent and hoax papers, retraction of papers. Why the pressure to publish?



Paper Retraction
Watchdog
Journalist, Ivan
Oransky

For more on this:

Retractions, Post-Publication Peer Review, and Fraud: Scientific Publishing's Wild West

[https://www.youtube.com/
watch?v=PGBrfyOCCII](https://www.youtube.com/watch?v=PGBrfyOCCII)

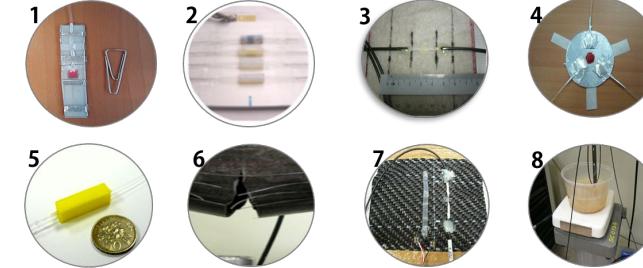
So as a summary, when you make a public claim....



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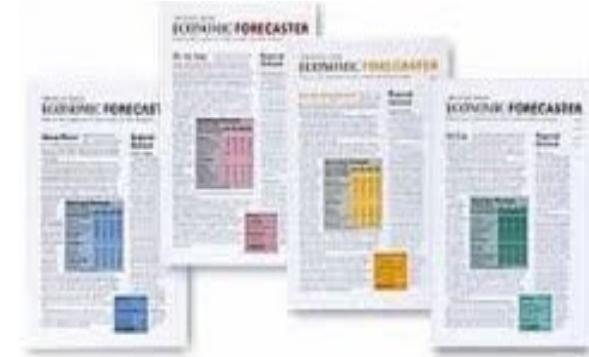
Worthy Idea

Ideas can be stolen



Investigation

Unbiased and no harm done



Publication

Honest reporting

At each stage, there are potential ethical issues.

Of course, if you do not formally announce your report through publications, you don't claim anything in the public space, in general, no problem. But if you do research, you aim to publish (maybe you are required to make a claim what is your contribution to earn MC or degrees), you need to be careful to do due diligence to report honestly. Once published, it's there permanently

What constitute honest reporting?

Let's look at what is NOT honest reporting

Types of dishonesty in academic research or project

There are many types of academic dishonesty - some are obvious, while some are less obvious.

- Cheating;
- Bribery;
-
- Conspiracy;
-
- Collusion;
-
-
- Academic Misconduct;
- Improper Computer/Calculator Use;
- Improper Online, TeleWeb, and Blended Course Use;
- Disruptive Behavior;

Research Misconduct*

Fabrication, falsification, or plagiarism in proposing, performing, or reviewing research, or in reporting research results.

1. **Fabrication** is making up data or results and recording or reporting them;
2. **Misrepresentation or Falsification** is manipulating research materials, equipment, or processes, or changing or omitting data or results such that the research is not accurately represented in the research record;
3. **Plagiarism** is the appropriation of another person's ideas, processes, results, or words without giving appropriate credit;
4. Research misconduct does not include **honest error** or **differences of opinion**.

When researchers misconduct themselves...

A trust relationship

“The scientific enterprise is built on a foundation of trust. Society trusts that scientific research results are an honest and accurate reflection of a researcher’s work. Researchers equally trust that their colleagues have gathered data carefully, have used appropriate analytic and statistical techniques, have reported their results accurately, and have treated the work of other researchers with respect. When this trust is misplaced and the professional standards of science are violated, researchers are not just personally affronted—they feel that the base of their profession has been undermined. This would impact the relationship between science and society.”

From Preface of to ‘On Being A Scientist: A Guide to Responsible Conduct in Research: 3e

The implications

- Erosion of trust of the scientific community
- Spread of falsehood (esp. sensational findings are difficult to contain and correct)
- Waste of previous resources (time, public funding, opportunity cost)
- Danger or harm to society
- Reputation of authors is damaged



Why researchers misconduct themselves...

Possible reasons

- Pressure to deliver (over committed, to out do self and others)
- To rise about competition (when many wants something of limited amount, so *very much*)
- To secure promotion and tenure (career security and financial rewards)
- For fame and fortune (self-gain)
- For peer recognition (to gain prominence in the eyes of peers?)
- For power (why do we want power?)
- To be ranked highly (why do we want to be ranked highly?)
- To secure grants and fundings (to maintain job and research)
- Publish-or-perish culture (increase publications, citations, impact factor, FWCI, new metrics)

Some interesting studies on why...

1. Gino, F., 2015. Understanding ordinary unethical behavior: Why people who value morality act immorally. *Current opinion in behavioral sciences*, 3, pp.107-111.
2. Tang, T.L.P. and Chiu, R.K., 2003. Income, money ethic, pay satisfaction, commitment, and unethical behavior: Is the love of money the root of evil for Hong Kong employees?. *Journal of business ethics*, 46(1), pp.13-30.
3. Schweitzer, M.E., Ordóñez, L. and Douma, B., 2004. Goal setting as a motivator of unethical behavior. *Academy of Management Journal*, 47(3), pp.422-432.

The 10 Greatest Cases of Fraud in University Research

<https://www.onlineuniversities.com/blog/2012/02/the-10-greatest-cases-of-fraud-in-university-research/>

Bengü Sezen's Research Misconduct

For Bengü Sezen at Columbia University, research was just a matter of manipulation. Over the course of a decade, Sezen held a "massive and sustained effort" to manipulate and falsify research data, and even fictitious people and organizations to back up her data and result.

Dr. Anil Potti's Cancer Research

In late 2010, Dr. Anil Potti resigned from his job at Duke University amid questions of research fraud, and his scandalous

Plagiarism at KU

Two University of Kansas computer scientists, Mahesh Visvanathan and Gerald Lushington, were found to have plagiarized major portions of their research, for which they had published three articles with an international audience. So much of their work was lifted from other scientists' work, that

Andrew Wakefield's Vaccine Connection

In 1998, physician Andrew Wakefield published a study in *The Lancet* claiming that his research indicated a connection between autism and the measles-mumps-rubella vaccine. This research was highly respected and undermined public confidence in the vaccine, leading to many parents

Hwang Woo-suk's Stem Cell Research

In 2006, Korean researcher Hwang Woo-suk was found to have fabricated a series of experiments in stem cell research, a field in which he was once considered one of the pioneering experts. He was previously infamous for his two *Science* journal articles in which he reported success in creating human

Remember this guy?

Paper Retraction Watchdog Journalist, Ivan Oransky

Before you think that research misconduct and fraudulent publication only occurs in overseas universities or organization, here are some local examples (yes, Singapore)

