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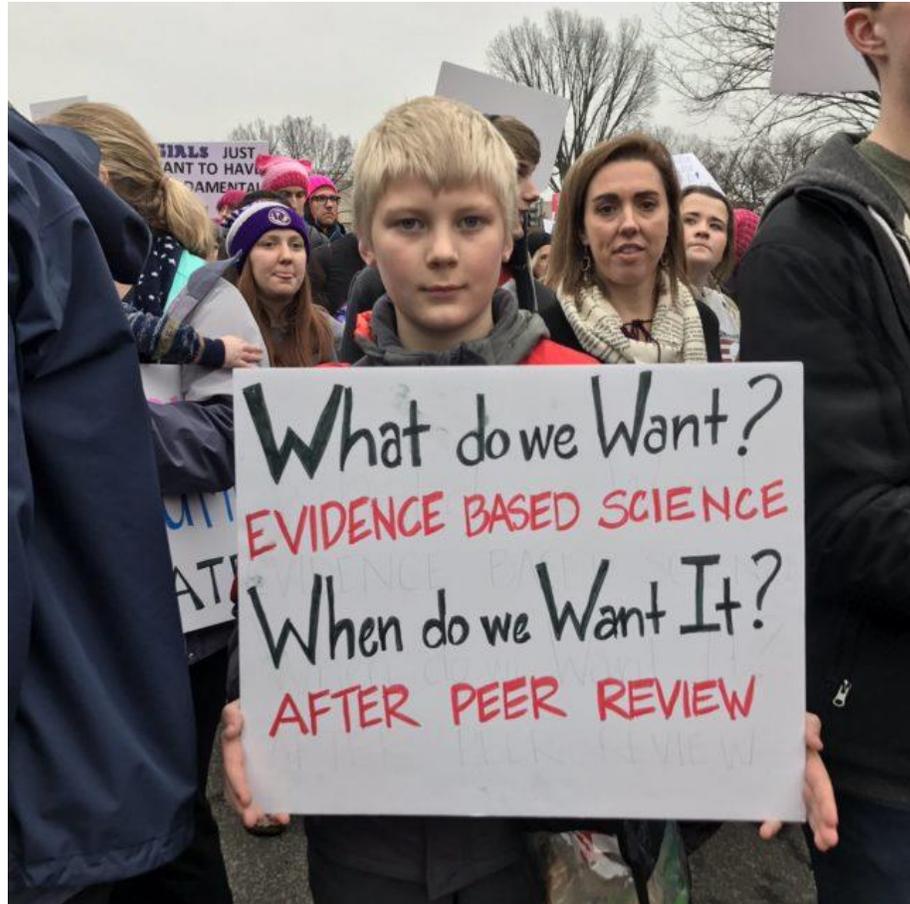
Using the Science of Reporting to Improve the Reporting of Science

Robert Bloomfield

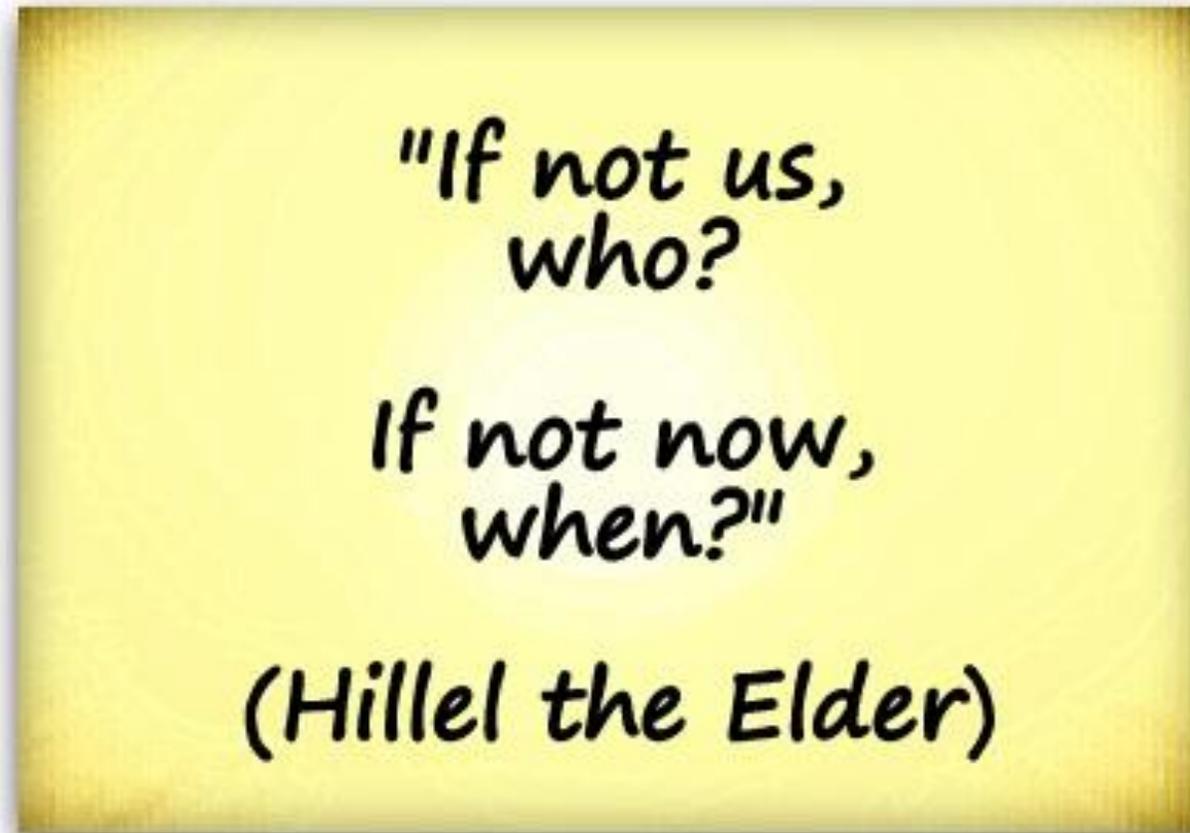
EAA PhD Forum, May 2017



Science is Not Trusted

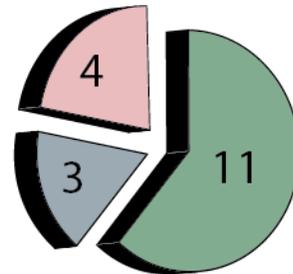


Accountants to the Rescue

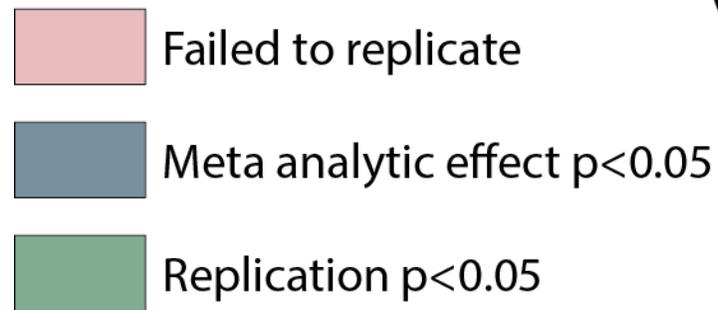
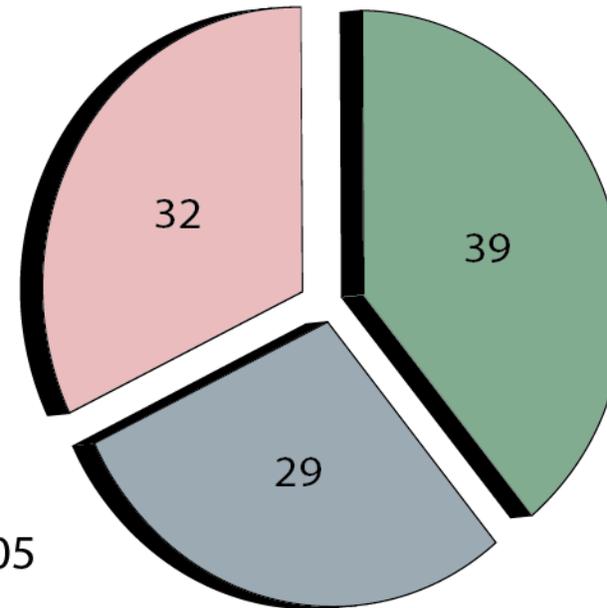


The Ideal Process of Science Gives Lots of Ammunition to Critics

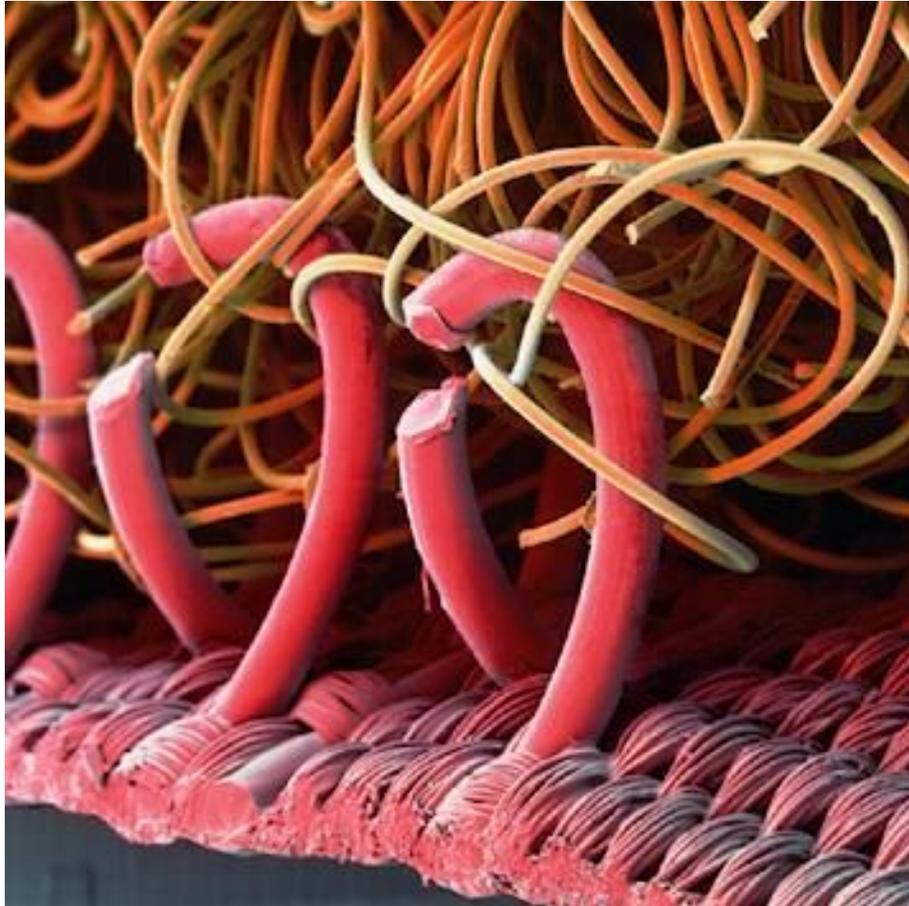
Economics (n=18)
Camerer et al., 2016



Psychology (n=100)
Open Science Collaboration, 2015



When We Take a Closer Look, Anything Seems More Complex



Let's Not Give Science Critics More Ammunition



Problems in Research Quality

Low power

- Collecting small samples with noisy measures—the best way to generate novel (but unreplicable) results

File drawer problem

- No-result studies aren't published

p-Hacking

- Highlighting analyses that generate $p < 0.05$

HARKing

- Hypothesizing After Results Are Known (CARKing for reviewers who Criticize after)

Plagiarism

- I include failing to cite similar prior findings that undermine novelty

Fabrication

- The most extreme form of malfeasance

Gelman's Version of Clarke's Law

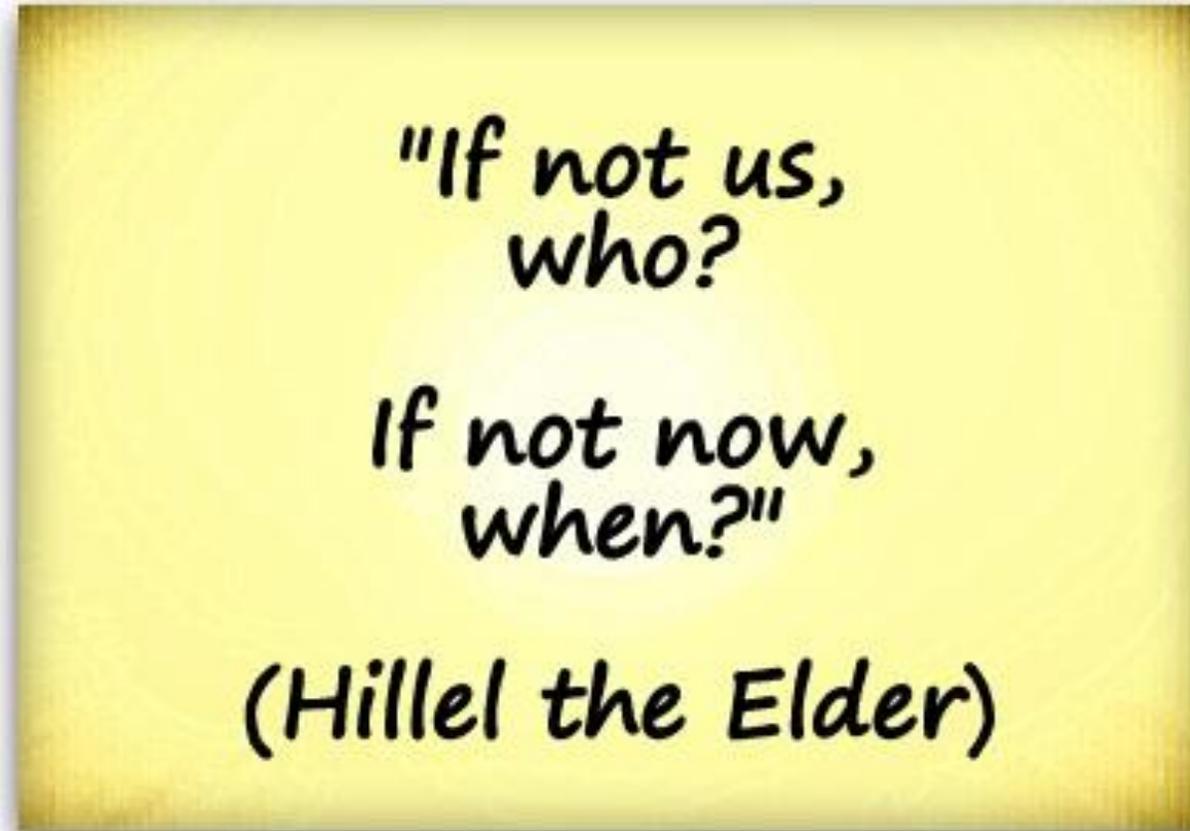
- Any sufficiently advanced technology is indistinguishable from magic
- Any sufficiently sloppy study is indistinguishable from fraud.

A Non-Compensatory Model of Research Quality

Shortcomings in research quality cannot be offset by being more prolific, cited, influential or prominent.

- Our reputation is likely to be damaged more, not less, by low-quality research that was prolific, cited, influential and prominent.

Accountants to the Rescue



Roadmap & Goals

Topics

- Incomplete Revelation Hypothesis
- Rethinking Managerial Accounting
- Editing
- Ethics & Controls

To Convey

- My view of the science of reporting
- How it helps the reporting of science
- Editorial trends
- Techniques for improving your work



Incomplete Revelation Hypothesis

“Information that is more difficult to extract from public data is less completely revealed in prices.”

Publication isn't enough—we need to consider users' processing costs. (Do they read footnotes?)

Revelation works fairly well for low-dimensional spaces, like NPV

Market for knowledge is not very efficient, because the engine (profit-seeking) is too weak, costs are high, too many directions to drive

Personal Experience....

“Unlike the [EMH], which describes a capital market pricing equilibrium, behavioral theories about market inefficiency describe transient pricing, i.e., states that are not expected to persist in perfect market conditions.

Moreover, there is no behavioral theory to describe the relation of accounting information to stock market prices in an equilibrium of market inefficiency.

Absent an equilibrium theory of market inefficiency, regulation that assumes inefficiency has no natural starting point, and more importantly, no framework to guide markets back to efficiency.”

What is Reporting Science?

Managerial reporting is the science of

- designing,
- deploying, and
- defending

reporting systems to help improve outcomes, given how those operating within the systems will employ and exploit it.

Predicting vs. Shaping Outcomes

External Reporting helps us understand and predict outcomes

Internal Reporting helps us shape outcomes

Investors and Readers

- Understand and predict

Managers and Authors

- Shape

Activist Investors and Editors/Reviewers

- Shape (but with far less insight)

Shaping Outputs vs. Shaping Outcomes (GASB)

Outputs

- A service provided, largely under the provider's control

Outcomes

- Results that occur partly (but not entirely) due to outputs

We can pay for what is under someone's control (outputs), or pay for what we value (outcomes)

Academics Are Currently Paid For Outcomes

Outcomes

- Findings, Citations, Influence, Fame

Outputs

- Data Gathering, Analysis, Interpretation

Editors publish novel claims that support hypotheses

Schools tenure researchers with citations, influence and fame

Shadows and Forms



All anyone
can see is
the shadow
of reality

Rene Magritte

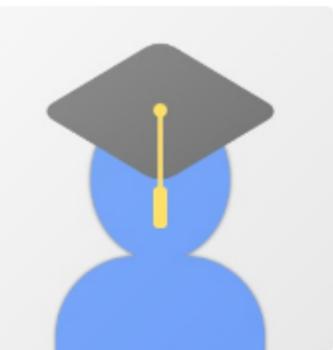


The Treachery of Measures

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Cornell

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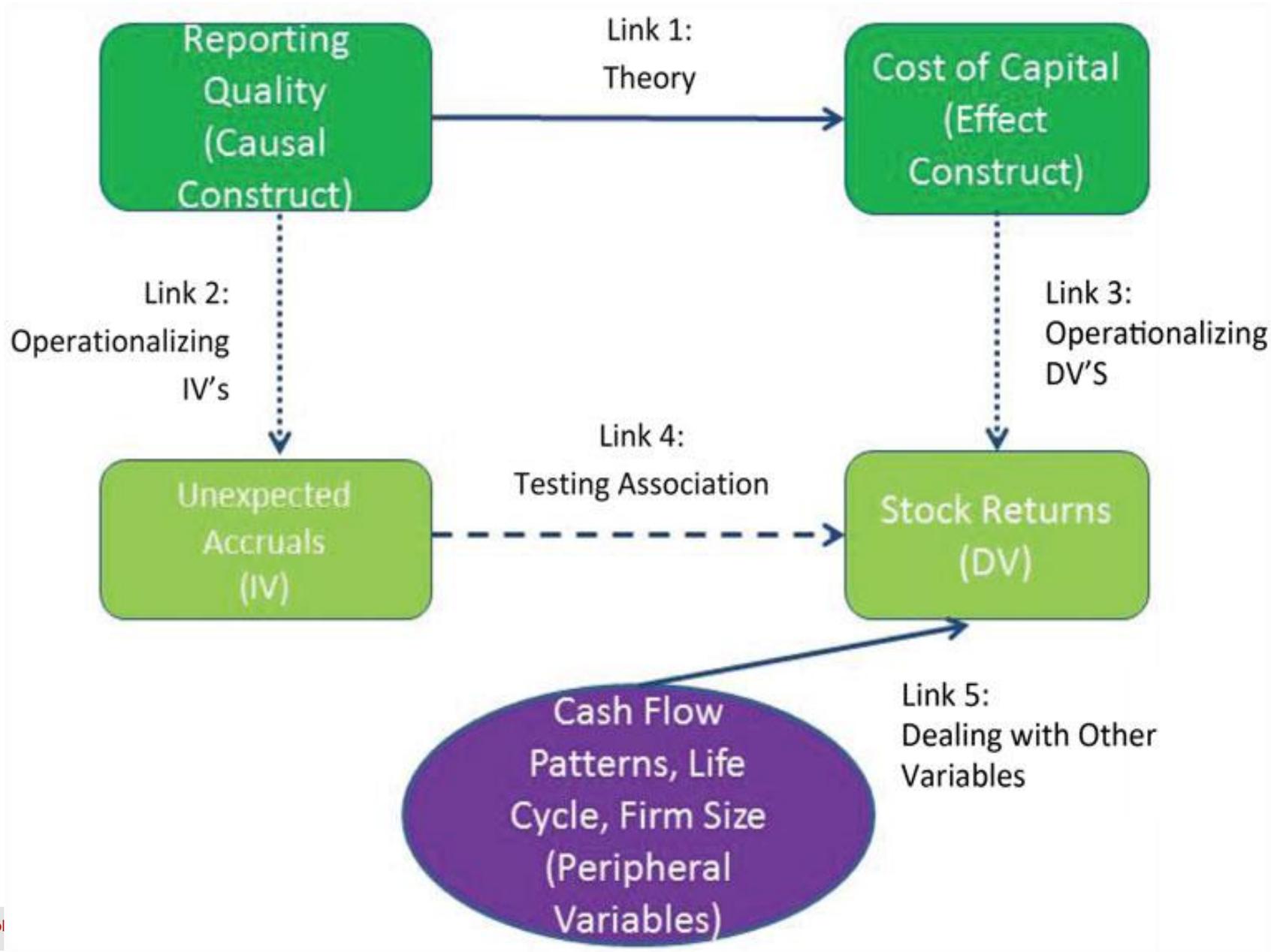
	All	Since 2012
Citations	4710	2264
h-index	32	22
i10-index	53	44

Co-authors [Edit...](#)

No co-authors

This is not performance

Libby Boxes



Campbell's Law & Measure Management

"The more incentive intensity is placed on any performance measure, the more those whose performance is being evaluated will distort the measure from the underlying construct it is intended to capture, and the more behavior will deviate from the objectives the measure was intended to promote."

Translation

- If you incentivize a proxy measure, people will manage the measure rather than focusing on the construct the measure is intended to capture (measure management)

Bloomfield's Law of Measure Management (because why not?)

Measure Management can be reduced by limiting

- Measurement error
- Incentive intensity
- Transparency
- Discretion
 - over operations
 - over reporting

Editor Response 1: Registration-Based Editorial Process (REP)

Propose to gather and analyze data to test hypotheses

74 submissions

Typical review & revision process

36 sent for review

Approved proposals receive “in-principal acceptance”

18 sent for 2nd review

Final report published if authors live up to their commitments

8 IPAs

Benefits and Costs of REP

Good

- No file drawer
- High power
- No HARKing
- Little incentive for p-hacking

Bad

- Possibly good outputs but poor outcomes
- Limited to studies that can be planned

Editor Response 2: Journal of Financial Reporting (JFR)

**A Journal of the
American Accounting
Association**

JFR welcomes research...

Using varied methods

- Analytical
- Archival
- Experimental
- Plus field studies, case studies, small sample analyses, surveys, and short articles

On a broad range of financial reporting topics

- Standard setting
- Information production and dissemination
- Relation of financial information to firm policies such as compensation and corporate governance
- Analysis by decision-makers such as equity investors, creditors, and analysts

JFR especially encourages...

Innovative research that

- Addresses a novel question
- Uses a new approach
- Re-examines 'well-established' findings
- Develops new theory or evidence that challenges current paradigms
- Reconciles, confirms, or refutes currently mixed or questionable results

American Accounting Association
Financial Accounting and Reporting

V.1 N.1 Jul. 2016

Journal of Financial
Reporting

Goals-Task Framework from “Gathering Data...” w/ Nelson & Soltes

Goals

- Specification
- Association
- Attribution
- Generalization
- Contextualization

Each paper makes a contribution by advancing goals of the literature, not achieving every goal by itself.

Tasks

- Recording
- Structuring
- Eliciting DVs
- Manipulating IVs
- Controlling setting

Each task advances some goals, often at the expense of others.

Methods and Tasks

Does the researcher...	The 80%	Hand-collected Archive	Field Studies	Field Exps	Surveys	Lab Studies	Lab Exps
Record data?	No	No	Yes	Yes	Yes	Yes	Yes
Structure data?	No	Yes	Yes	Yes	Yes	Yes	Yes
Elicit dependent variables?	No	No	No	No	Yes	Yes	Yes
Manipulate independent variables?	No	No	No	Yes	No	No	Yes
Control the data-generating setting?	No	No	No	No	No	Yes	Yes

Compromises

The more tasks you undertake, the more you can tailor your data to your research questions, but the further you get from your target setting.

To find out what happens when you change something, it is necessary to change it

--Box, Hunter & Hunter, 1978

How to Be a Good Reporter of Science



Pressure & Opportunity Swamp Rationalization

Bad behavior is caused by bad systems more than by bad people.



Moral Foundation Theory

Individualizing Values

- **Benevolence:** Don't harm those owed a duty of care.
- **Fairness:** Don't show unwarranted favoritism.

Binding Values (Community)

- **Loyalty:** Don't betray your group
- **Authority:** Don't undermine legitimate authorities

Binding Values (Sacred)

- **Purity:** Don't dirty what should be pure.

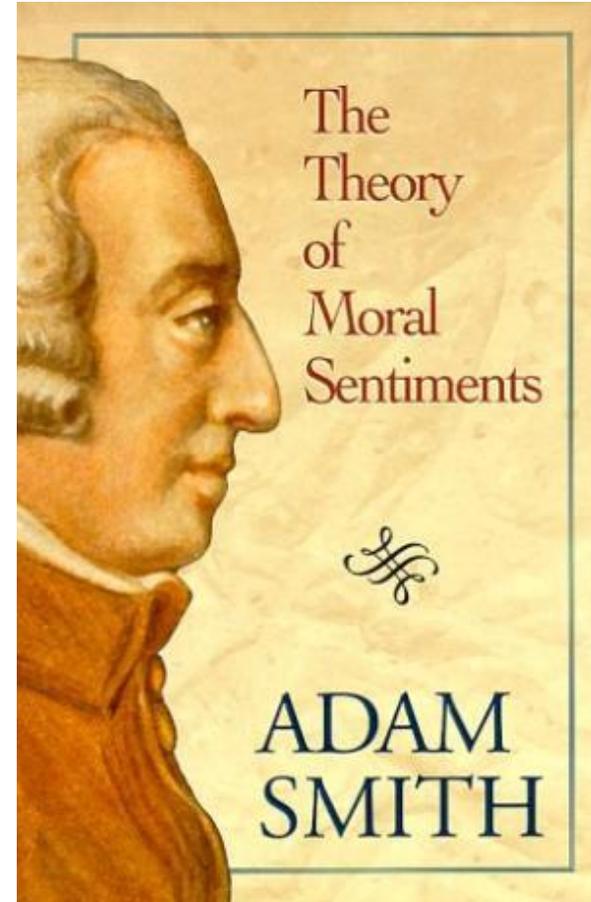
Theory of Moral Sentiments

Our emotions provide empirical evidence of what is moral:

- If it angers us, it isn't moral

How do you feel when

- Someone steps on your toe on purpose
- Someone steps on your toe because they tripped
- “No, I didn't break your favorite vase”
- “No, your grey hair makes you look distinguished”



Moral Terrain: Because Values Aren't Enough

Benevolence

- Who is owed a duty of care?

Equity

- What is favoritism and when is it warranted?

Loyalty

- Who is my group?

Authority?

- What authorities are legitimate?

Purity

- What is dirty? What should be pure?

Useful Techniques

Simple

Remember Your Incentives Aren't So Predictable

A handful of people will determine your tenure case—and none of them promise that measure X will yield outcome Y.

Separation of Duties

At least 2 people are involved in every stage of data gathering, processing and analysis

Register Your Hypotheses

Reviewers and Editors in Psych love this one little trick!

Complex

Get input early and often from independent colleagues

Forces you to defend the “presumption of honesty” and limits your “research degrees of freedom” later on

Craft your claims carefully

Can you really say “should”, “because”, and even “is” . Pick a claim and stick to it!

The Knowledge Claim Two-Step

Analytic-Synthetic

Descriptive-Causal

Positive-Normative

Instrumentalist-Realist

Analytic vs. Synthetic Knowledge

High quality studies can't survive in a world where editors reward novel findings with publication.

- Is it a claim about the real world, or just the result of a model describing incentives and institutions?
- When journals define success “as publishing a lot of novel findings, labs succeeded when they did science that was ‘low effort’ — sloppy and probably irreproducible. Research groups doing high-effort, careful science didn’t publish enough. And they went the way of the dinosaurs.”

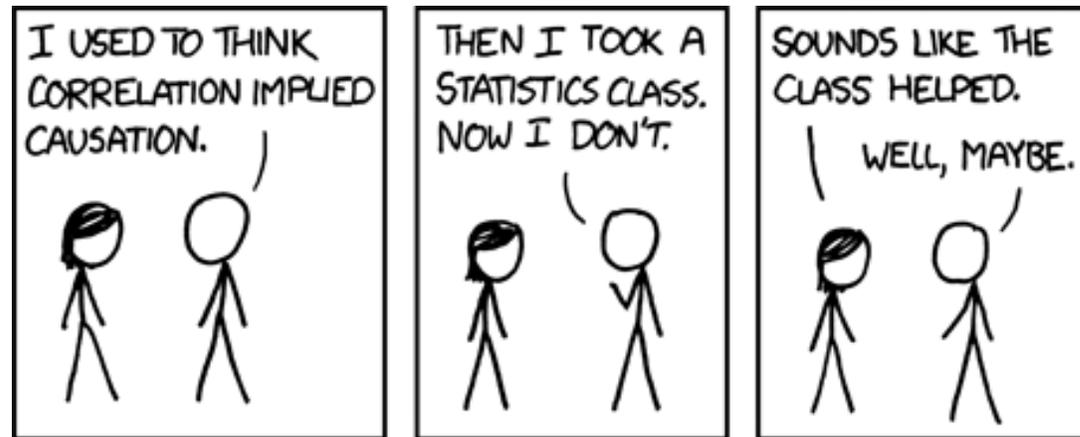
An *analytic* claim expresses what we know about a model of the world, as derived from definitions, assumptions and logical or mathematical calculation.

A *synthetic* claim combines analytic knowledge with empirical evidence, so that we can express what we know about the world as it actually is, not just how we model it.

Descriptive vs. Causal

There is a strong link between research quality and editor demands for novel findings.

- Do editor demands cause changes in research quality, or is it just a correlation?



Positive vs. Normative

If you want researchers in your field to generate higher-quality research, you should reduce incentives for generating novel findings.

- Is this a claim about what is true or what is best?



Instrumentalist vs. Realist

Claims about Constructs (Realist):

- There is a strong link between research quality and editor demands for novel findings.

Claims about Proxy Measures (Instrumentalist)

- Journals with mission statements and abstracts that include many occurrences of words like 'novel' and 'surprising' are more likely to publish studies with low sample sizes and statistical power.

Our Future Is In Your Hands



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