

Introductions  
oooooooooooo

Readings for Today  
oooooooooooo

Summative lecture  
oooooooooooooooooooooooooooo

# Class 1

# Agenda

- Introductions (30 minutes)
  - Getting to know each other
  - Syllabus and materials overview
  - Typical class flow
- Readings for today (70 minutes, with 5 min break)
- Summative lecture and open discussion (20 minutes)
  - Key principles
  - Additional thoughts

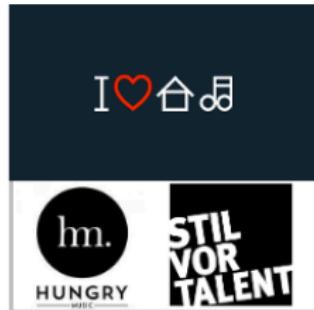
Introductions  
●ooooooooo

Readings for Today  
oooooooooooo

Summative lecture  
oooooooooooooooooooooooooooo

# Introductions

## A little about me



## A little about me



## A little about me



# A little about you

Let's fill out some introductory surveys: [Pollev.com/drfox](https://pollev.com/drfox)

# Syllabus and materials overview

- Syllabus
- Brightspace
- Dropbox

# Typical class flow

- *Part I:* Conceptual grounding and agenda setting (10 minutes)
- *Part II:* Core paper discussion (45 minutes):
  - We will discuss the 2-3 papers that all students have been assigned to read in detail
  - These papers typically will provide a mix of conceptual background and how-to guides
- *Break*

# Typical class flow

- *Part III: Activity period (40 minutes):*
  - (Weeks 2 – 7) Compare / contrast: One group tasked with reviewing two additional papers to explain their points of intersection, divergence, and ties to core papers
  - (Weeks 8 – 14) Replication: One group tasked with using data from one of my current or published papers to replicate analyses and show the class the process

# Typical class flow

- *Part IV:* Summative lecture on concepts (15 minutes):
  - I will make a brief presentation to tie together and highlight key concepts
  - Elements missed in the general discussion will be given greater focus
- *Part V:* Open discussion (5 minutes)

# Readings for Today

## Preamble

I have provided some discussion questions for us to consider in case we need to get the ball rolling.

We may or may not discuss those questions depending on the flow of the class.

In general, I would rather talk about your ideas and questions rather than these “canned” items.

# Popper (2002)

## The Logic of Scientific Discovery. [Ch .1]

*According to the view that will be put forward here, the method of critically testing theories, and selecting them according to the results of tests, always proceeds on the following lines. From a new idea, put up tentatively, and not yet justified in any way—an anticipation, a hypothesis, a theoretical system, or what you will—conclusions are drawn by means of logical deduction [...]*

*[Then,] there is the testing of the theory by way of empirical applications of the conclusions which can be derived from it. [p. 9]*

# Popper (2002)

## Discussion Questions

- Reactions? Insights? Disagreements?
- In your view, what is the main point?
- Do this worldview currently inform your work? How might it?

Karl  
**Popper**

The Logic of Scientific  
Discovery



# Mantere and Ketokivi (2013)

Reasoning in Organization Science. Academy of Management Review, 38(1), 70-89.

*Labels aside, a closer look at research practice reveals that researchers across research traditions use all three forms of reasoning. It is hardly surprising to observe that we all make inferences to a case (use deduction), inferences to generalizations (use induction), and inferences to explanations (use abduction). Thus, using reasoning types as labels to describe entire research designs is misleading. Instead, differences between research approaches, whatever they may be, are found not in the types of reasoning used but, rather, in how the three reasoning types are used in conjunction with one another. (p. 76)*

# Mantere and Ketokivi (2013)

## Discussion Questions

- What the hell are they talking about?
- What mode(s) of reasoning do you tend to rely on in your current work?
- What concrete practices did you draw from this paper, if any?

J. Academic & Professional Writing  
Vol. 1, No. 1, Summer 2006  
<http://www.ohio.edu/japw/>

### REASONING IN ORGANIZATION SCIENCE

SAMI MANTERE  
Helsinki School of Economics

MIKKO KETOKIVI  
Helsinki School

Researches regarding organizational methods of scholarly communication are typically limited to the members' attitudes towards the creation of organizational scientific knowledge. More generally, has been approached from management research perspective (Morrison & McLean Parks, 2001) and the role of managers in the process of scholarly communication (Mantere, 2006). In this article we argue that the lack of attention given to the development of a more systematic approach to the problem of scholarly communication in organization science is due to the lack of a clear understanding of the nature of scientific reasoning. We argue that the lack of a clear understanding of the nature of scientific reasoning is due to negative element into the formation and development of scientific research and ergo argument.

The objective of scholarly reasoning is to improve our knowledge of a phenomenon. The creation of organizational scientific knowledge, more generally, has been approached from management research perspective (Morrison & McLean Parks, 2001) and the role of managers in the process of scholarly communication (Mantere, 2006). In this article we argue that the lack of attention given to the development of a more systematic approach to the problem of scholarly communication in organization science is due to the lack of a clear understanding of the nature of scientific reasoning. We argue that the lack of a clear understanding of the nature of scientific reasoning is due to negative element into the formation and development of scientific research and ergo argument.

We find three misconceptions among researchers for their belief of what constitutes good and effective evaluation of the research. We are also grateful to license editor Alan Williams for his detailed comments and suggestions. This article is based on the discussions that started in Bill McLean's whose encouragement and support were instrumental in the completion of this article. The authors have played a crucial role in the initiation of the article.

Copyright © 2006, Sami Mantere and Mikko Ketokivi. All rights reserved. No part of this publication may be reproduced without the expressed written permission of the copyright holder. ISSN 1548-6613

## Nosek and Errington (2020)

What is replication? PLOS Biology: 1-8.

*To be a replication, 2 things must be true: outcomes consistent with a prior claim would increase confidence in the claim, and outcomes inconsistent with a prior claim would decrease confidence in the claim. The symmetry promotes replication as a mechanism for confronting prior claims with new evidence. Therefore, declaring that a study is a replication is a theoretical commitment. Replication provides the opportunity to test whether existing theories, hypotheses, or models are able to predict outcomes that have not yet been observed. Successful replications increase confidence in those models; unsuccessful replications decrease confidence and spur theoretical innovation to improve or discard the model. (p. 2)*

# Nosek and Errington (2020)

## Discussion Questions

- Do you agree with their definition of replication?
- What are the benefits and drawbacks of applying such a definition?
- How does this fit in with the replication crisis?

PLOS BIOLOGY

### PERSPECTIVE What is replication?

Brian A. Nosek<sup>1,2,\*</sup>, Jennifer M. Errington<sup>2,3</sup>  
<sup>1</sup> Center for Open Science, Charlottesville, Virginia, United States of America, <sup>2</sup> University of Virginia, Charlottesville, Virginia, United States of America, <sup>3</sup> University of Virginia, Charlottesville, Virginia, United States of America

\* [nosek@virginia.edu](mailto:nosek@virginia.edu)

### Abstract

Credibility of scientific claims is established with evidence for their replicability using new data. According to common understanding, replication is resulting in study products and observing whether the same findings occur. This definition is intuitive, easy to apply, and consistent with the process of science. However, it is a costly form of replication. We argue that the costs of replication are often about a third from prior research. This definition reduces emphasis on operational characteristics of replication, such as sample size, and obscures the purpose of replication. The purpose of replication is to advance theory by confirming existing understanding with new data. Replication is not a means to verify existing theory or to demonstrate a new theory. Instead, replication provides evidence of generalizability across the conditions of the study. We argue that replication is a means to increase the credibility of the validity of the study. Unadjusted replication is not a means to increase the credibility of the validity of the study. Adjusted replication is a means to increase the credibility of the validity of the study. Defining replication as a combination of current theoretical expectations clarifies its important, needed, and generative role in scientific progress.



### OPEN ACCESS

Editor's Note: Brian A. Nosek and Jennifer M. Errington declare that the authors had no conflicts of interest with respect to their roles as author(s) or getfunder(s) of this work. No conflicts of interest were identified for other members of the author team.

### Author summary

Replicability of scientific claims is established with evidence for their replicability using new data. According to common understanding, replication is resulting in study products and observing whether the same findings occur. This definition is intuitive, easy to apply, and consistent with the process of science.

However, it is a costly form of replication. We argue that the costs of replication are often about a third from prior research. This definition reduces emphasis on operational characteristics of replication, such as sample size, and obscures the purpose of replication.

The purpose of replication is to advance theory by confirming existing understanding with new data.

Replication is not a means to verify existing theory or to demonstrate a new theory.

Instead, replication provides evidence of generalizability across the conditions of the study.

Unadjusted replication is not a means to increase the credibility of the validity of the study.

Defining replication as a combination of current theoretical expectations clarifies its important,

needed, and generative role in scientific progress.

PLOS Biology | <https://doi.org/10.1371/journal.pbio.3000000> March 07, 2020

1/16

# Rynes and Bartunek (2017)

Evidence-Based Management: Foundations, Development, Controversies and Future.

*Management academics have long noted a large gap between academic research and managerial practice. [...] Some have viewed the causes of the gap as lying primarily with academic researchers, who are characterized (perhaps caricatured) as having become overspecialized, self-referential, obsessed with theory, excessively mathematical, jargonladen, unconcerned about practical problems, and dismissive of practitioners [...] Others have focused on practitioners, who are sometimes characterized or caricatured as research phobic, anti-intellectual, susceptible to unproven fads and fashions... (p. 236)*

Rynes and Bartunek (2017)

## Discussion Questions

- Are you familiar with evidence-based practice from your current work?
  - In your PhD studies so far, have you seen a concerted effort to move towards evidence-based management?
  - Where might you fit in helping to advance evidence-based management? How might you do about doing it?



## Evidence-Based Management: Foundations, Development, Controversies and Future

Sara L. Rynes<sup>1</sup> and Jason M. Raymond<sup>2</sup>

<sup>1</sup>Tippie College of Business, University of Iowa, Iowa City, Iowa 52242; email: bates@bus.uiowa.edu

<sup>1</sup>Conrad Grotius School of Management, Simon College, Chesterfield 1885, Missouri 63018; e-mail: [bmw@simon.edu](mailto:bmw@simon.edu).

### **Keywords:** evidence-based management, evidence-based practice, research-practice gap, academic-practitioner relationships, systematic reviews

**Abstract**  
We review the recent development of evidence-based management (EBM) research trying to bridge the gap between research and practice, discrepancy findings consequences, and the emergence of evidence-based methods (EBMs). We provide a definition of EBM and give four literature reviews on the following topics: (1) the role of EBM in strategic management; (2) the role of EBM in operational management; (3) the role of EBM in human resources management; and (4) the role of EBM in marketing. Finally, we conclude that despite the EBM concept advancing advances, there are problems, trading valid, unvalid, unpractical, epistemological, and methodological diverse perspectives to be considered. We also argue that the EBM research agenda needs to be expanded. Our research for future research emphasizes first and foremost, increasing the production of highly empirical studies in EMBMs. Topical particular interest include research co-operation by academics and practitioners, practical case studies of EBM implementation, and the development of EBM as a teaching and learning mechanism. We also call for broader types of quantitative research (EBS) that have generally been conducted at the organizational sciences.

Introductions  
oooooooooooo

Readings for Today  
oooooooooooo

Summative lecture  
●oooooooooooooooooooooooooooo

## Summative lecture

# Preamble

What follows is my personal, idiosyncratic synthesis of the pieces that we have read to date. To be clear, many interpretations are possible due to these articles' collective:

- richness
- overlap
- distinctive features

Furthermore, there are multiple plausible criteria to judge quality research and a lack of universal consensus given the multiplicity of aims and epistemological orientations

This is not to say anything goes; rather, I am trying to highlight the limits of my knowledge and my unique lens that necessarily abstracts away features from complex topics.

# Some key principles of research design

- Falsifiability
- Defensibility
- Applicability
- Replicability

# Falsifiability

- Falsifiability provides a basis for to use abductive reasoning to augment pure deductive reasoning. The latter is true a priori if the premises and statements are valid. Thus, pure deduction can transform our understanding of the system, but cannot generate truth from outside the established system - this must be uncovered by other means.

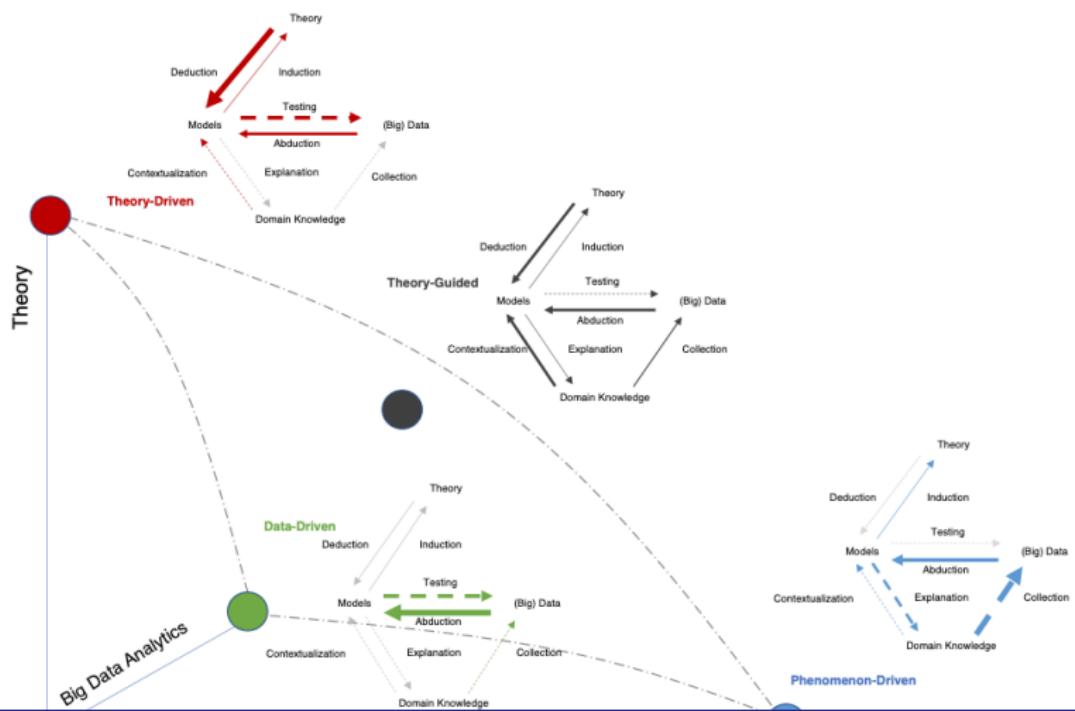
# Falsifiability

*My proposal is based upon an asymmetry between verifiability and falsifiability; an asymmetry which results from the logical form of universal statements. For these are never derivable from singular statements, but can be contradicted by singular statements.* - Popper (2002, 19)

# Defensibility

- If the logist of our arguments are defensible and the evidentiary basis is sound, we are better able to act upon the conclusions with confidence.
- We rely on multiple modes of inference to assert our claims credibility - my coauthors and I argue that the relative importance of each depends on the type of research design employed and intended contribution.

# Defensibility



# Applicability

But our arguments and conclusions, even if correct, are irrelevant if they aren't applicable to real-world problems.

# Applicability

*I was recently at a brown-bag seminar where a pair of management colleagues were seeking advice about a preliminary research idea. It took just a few minutes for us all to agree that their research question was fascinating. It addressed an extremely interesting issue that both academics and practicing managers would like to learn more about. The only problem: the presenters had no theory. So, we spent the entire session going through our collective mental catalogues of theories that might be invoked so that the project could proceed and have some prospect of publication. People were mentioning theories I'd never heard of. We became frenzied, nearly desperate: "Good god, there must be a theory out there that we can latch onto." - Hambrick (2007)*

# Replicability

- Finally, the structure of our empirical base presumes that the research was performed in good order and that the findings are replicable within their domain of applicability.

# Replicability

*In contrast, an accumulation of evidence that points to empirical regularities provides us with a much broader and more generalized understanding of the world. Such empirical regularities are known as 'stylized facts'. - Helfat (2007)*

# The relative importance of each principle

We can consider four basic “classes” of research in management:

- basic disciplinary research (primary studies in AER, AJS)
- applied research conducted in a management context (primary studies in AMJ)
- data-driven decision making derived from primary studies (systematic reviews in IJMR, JOM)
- practitioner-focused outlets (articles in HBR, CMR, popular press)

Where might, for example, applicability be more highly valued?  
Falsifiability?

## Aside: Useful types of thinking when conducting research

# Skeptical thinking

*"Science depends on organized skepticism, that is, on continual, methodical doubting. Few of us doubt our own conclusions, so science embraces its skeptical approach by rewarding those who doubt someone else's." Neil deGrasse Tyson, *Origins: Fourteen Billion Years of Cosmic Evolution**

# Skeptical thinking

MasterClass

# Neil deGrasse Tyson

—

Teaches Scientific Thinking  
and Communication



W

2:43

A promotional image for a MasterClass course featuring Neil deGrasse Tyson. The image shows him from the chest up, wearing a dark suit jacket over a blue button-down shirt. He has a slight smile and is looking towards the camera. To his left, the text "MasterClass" is at the top, followed by "Neil deGrasse Tyson" in large letters, a horizontal line, and "Teaches Scientific Thinking and Communication". A small "W" logo is in the bottom left corner. In the bottom right corner, there is a black box with the number "2:43" in white.

<https://www.youtube.com/watch?v=io6QdGcoWMU>

# Bayesian thinking

Implicit in the discussions above is a question of degree of belief.

- Nosek and Errington talk about how replication increases or decreases our degree of belief.
- Popper uses the asymmetry of verification to achieve binary outcome of disconfirmed evidence.
- But couldn't we be more subtle in our treatment of beliefs?

Indeed, we can through the application of Bayesian logic and Baye's Rule.

- I will not be teaching you the statistical methods that follow from this, but you can find them.

# Bayesian thinking

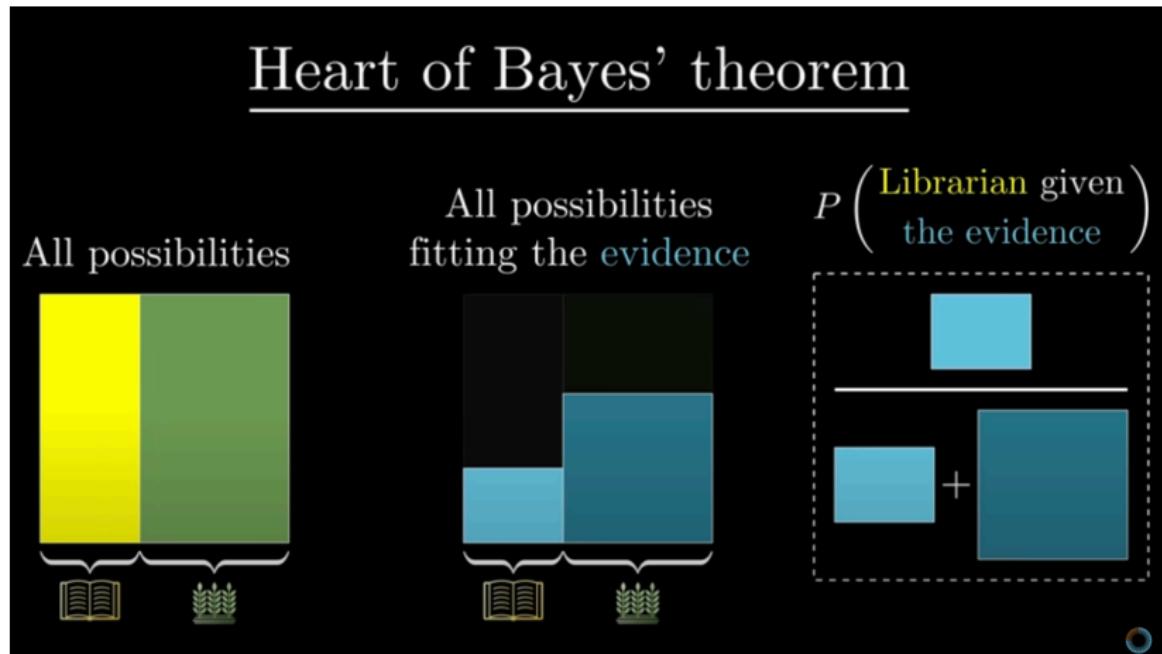


Figure 3: A Primer on Bayesian Thinking

# Strategic thinking

Finally, it helps to be strategic when thinking about designing and evaluating research. By this I mean thinking that embraces three characteristics:

- Rigor
- Complexity
- Ambiguity

# Strategic thinking

- Rigor
  - Comprehensive – focusing attention on both the forest (a research program) and the trees (discrete methods or studies)
  - Adaptive – balancing multiple goals and knowing what progress can be made against one or more of them simultaneously
  - Inferential – moving from what is known to what can be reasonably inferred

# Strategic thinking

- Complexity
  - Dynamics – accounting for first and second order effects that are material across actors, choices, and time
  - Allocentricity – outcomes often jointly determined by internal and external factors, often other parties or agents

# Strategic thinking

## ■ Ambiguity

- Unstable – non-linear shifts across time and situations may limit generalizability and heighten the role of context
- Unforeseeable – many research projects are a full reinforcement learning problem, learning while doing is necessary to reveal the evolving state of the world

## Next class

### Research II: Problems

- 1 Huff, A. S. (1999). Writing for Scholarly Publication. SAGE. [Ch. 1]
- 2 McGrath, Joseph E. (1981) Dilemmatics: The Study of Research Choices and Dilemmas, American Behavioral Scientist, 25, 2, 179-210
- 3 Simsek, Z., Heavey, C., Fox, B. C., & Yu, T. 2022. Compelling Questions in Research: Seeing What Everybody Has Seen and Thinking What Nobody Has Thought. Journal of Management, 48(6), 1347-1365.

## Next class

### Research II: Problems

Our first compare and contrast discussion will take place.

Presenters, please reach out if you have questions or concerns!

#### 4 Compare / Contrast

- Daft, R. L., & Lewin, A. Y. 2008. Rigor and relevance in organization studies: Idea migration and academic journal evolution. *Organization Science*, 19: 177-183.
- Tushman, M., & O'Reilly, C. (2007). Research and Relevance: Implications of Pasteur's Quadrant for Doctoral Programs and Faculty Development. *The Academy of Management Journal*, 50, No. 4, 769-774. <https://doi.org/10.2307/20159888>

## References

- Hambrick, Donald C. 2007. "The Field of Management's Devotion to Theory: Too Much of a Good Thing." *The Academy of Management Journal* 50, No. 6: 1346–52.
- Helfat, Constance E. 2007. "Stylized Facts, Empirical Research and Theory Development in Management." *Strategic Organization* 5 (2): 185–92.
- Popper, Karl R. 2002. *The Logic of Scientific Discovery*. Routledge.