OIDD 989. Explaining Explanation

Instructor: Duncan J. Watts

Time: Wed, 3-6PM
Location: TBD

Course Overview

Description
In the social sciences we often use the word “explanation” as if (a) we know what we mean by it, and (b) we mean the same thing that other people do. In this course we will critically examine these assumptions and their consequences for scientific progress. In part 1 of the course we will examine how, in practice, researchers invoke at least three logically and conceptually distinct meanings of “explanation:” identification of causal mechanisms; ability to predict (account for variance in) some outcome; and ability to make subjective sense of something. In part 2 we will examine how and when these different meanings are invoked across a variety of domains, focusing on social science, history, business, and machine learning, and will explore how conflation of these distinct concepts may have created confusion about the goals of science and how we evaluate its progress. Finally, in part 3 we will discuss some related topics such as null hypothesis testing and the replication crisis. We will also discuss specific practices that could help researchers clarify exactly what they mean when they claim to have “explained” something, and how adoption of such practices may help social science be more useful and relevant to society.

Structure of the course
Class will be discussion based and will meet once per week for 3 hours. Students will be expected to have read all the mandatory readings for each week prior to attending class and will be required to submit weekly “reading reports” prior to each class.

Evaluation
30% Class attendance and participation.
30% Weekly reading reports (to be submitted prior to class)
40% Final project (due final class).

1 First class will be Wed Jan 20. There will be no class the week of March 10 (Spring Break). There will be no class either the week of Feb 17 or Feb 24 (TBD). Last class will be Wed Apr 28
Class attendance and participation.
This course, by its nature, is dealing with an imprecisely defined topic with blurry boundaries and ambiguous connections among numerous other topics. For this reason, it is essential for students to engage actively with the readings and, via in-class discussions, with each other. Students are therefore expected to attend all classes where exceptions will be made for medical illness (all other absences should be approved in advance by the instructor). In order to facilitate broad participation the instructor will appoint weekly discussants (schedule TBA).

Reading reports
To ensure that students come to class prepared, a weekly reading report that briefly summarizes the main arguments of the required readings.

Final project (15-20 pages double spaced, excluding references)
Choose a domain (e.g. your research area, a literature review of a field, something else that catches your interest such as history or contemporary events) and analyze how explanations in that domain are deployed in both clarifying and misleading ways. Your approach may be quantitative or qualitative, broad or narrow, and may focus on any of the subtopics of the class. The objective is to demonstrate understanding of the material and an ability to apply it “in the wild.”

PART 1

Week 1: Introduction

Optional

Week 2: Explanation as Causality
Optional

Week 3: Explanation as Prediction

Optional

Week 4: Explanation as Sensemaking
Optional


PART 2: Examples

Week 5: Explanations in Social Science


Optional

Alternatives to the Current Model of Sociological Science.” Annual Review of Sociology, 1–19.

**Week 6: Explanations in History**


**Optional**


**Week 7: Explanations in Business**


**Optional**

Week 8: Explanations in Machine Learning


Optional


PART 3: Improving Scientific Explanations

Week 9. Null hypothesis testing

Optional


Week 10. Reproducibility and Replication


Optional

Week 11: Generalization


Optional


Week 12. Experiments


Optional


Week 13. Other Ideas


Optional