PROJECT STATEMENT   BENJAMIN MAKO HILL

QUESTION #1: WHAT IS YOUR MOST IMPORTANT WORK TO DATE?

My research focuses on *peer production*, the cooperative, Internet-based model of organizing the production of public information goods behind Wikipedia and Linux (Benkler, 2006). My most influential work is "Laboratories of Oligarchy: How the Iron Law Extends to Peer Production" (Shaw & Hill, 2014). The work is important for three reasons: (1) the paper tested, and found disconfirming evidence for, the stylized fact that peer production is inherently resistant to the emergence of oligarchy; (2) the paper is methodologically innovative in that it is a rare example of an organizational-level study of peer production and in that it uses "big data" techniques from computer science and engineering; (3) finally, it provided one of the very first multi-organization quantitative tests of Robert Michel's classic "iron law of oligarchy" in any setting.

QUESTION #2: WHAT IS YOUR PLAN OR FOCUS FOR THE FELLOW-SHIP YEAR?

While some attempts to create online public information goods, such as Wikipedia, have attracted millions of contributors, the vast majority fail to attract even a second participant. Although a growing body of work—including my own—has tested social scientific theories about why some communities grow larger and produce more, we remain stubbornly unable to predict community success or offer prescriptions to would-be creators on what they should or should not do (Benkler, Shaw, & Hill, 2015).

New machine learning and statistical prediction techniques from computer science have been used over the last several years to successfully predict "information cascades" like viral messages on social media. This work has shown that to predict information cascades, one must break down the prediction problem into a series of "developmental" stages (e.g., growth from 0-to-1, 1-to-2, 2-to-4, 4-to-8, etc. likes) (e.g., Cheng, Adamic, Dow, Kleinberg, & Leskovec, 2014). A striking result in this work is that predictors at early stages of the "life" of a message shift as messages "mature." Early predictors of success grow stronger, weaker, and even become reversed in sign, at later stages. These dynamics make more traditional approaches to understanding average causal effects ineffective. Applying these techniques designed for prediction toward testing causal theories in a more traditional social scientific context involves a number of both practical and epistemological challenges (Kleinberg, Ludwig,

Mullainathan, & Obermeyer, 2015).

I plan to spend my fellowship year to develop a "developmental" approach to understanding public goods provision in online organizations. I hope to adapt techniques from computer science including machine learning, A/B testing, and "big data" engineering, to test causal theories about collective action at different points along online communities' growth trajectories. I plan to use a year at CASBS to develop this project and to work through several epistemological, methodological, and data-oriented challenges associated with using these methods to pose and test social scientific theories.

I hope to learn from others at CASBS from across the social sciences who have engaged with similar dynamic theories and who have struggled with modeling dynamic processes. I am interested in working with other fellows at CASBS to use these techniques to address big social scientific questions like: How do we support durable organizations and the production of public goods? How do we build more adaptable systems and policies to support healthy and productive communities?

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