

The Experimentalist's Manifesto

Joseph A. Konstan
University of Minnesota

konstan@cs.umn.edu
<http://www.grouplens.org>

Disclaimers

- » I Like Building Things
- » I Like Experimenting on Others
- » I'm Getting Old and Grumpy
 - Too many research papers are boring
 - Too many researchers seem lazy

Organization (stolen)

- » Introduction

- » Three Substantive Sections
 - The Purpose of Research
 - Observation, Analysis, Experimentation
 - Own vs. Inhabit; Lab vs. Field

- » A Witty and Insightful Conclusion

Introduction

- » I'm Getting Bored
 - @jkonstan 72% of tweets contain made-up facts like this one
 - 100% of users of our whiz-bang desktop videoconferencing use the space bar
 - meat-slicer theory of collaborative systems: users hang together until they are sliced apart, then their inner strength determines if they remain whole or shred

It wasn't always this way ...

- » Seems like the preponderance of data is leading to more analysis vs. experimentation
- » Or maybe it was always this way ...
- » Doesn't matter

THE PURPOSE OF RESEARCH

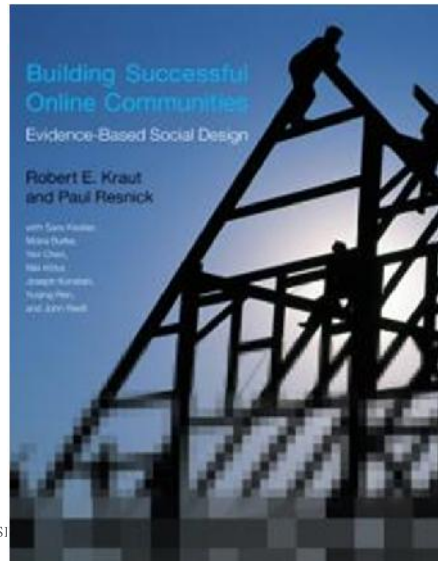
Quiz #1: Why Do Research?

1. Because it pays so much better than fields like law, business, medicine, and sports!
2. Because it helps attract women/men!
3. To contribute to knowledge!
4. Because there are opportunities we cannot yet seize and challenges we cannot yet surmount!

A Little Narrower

- » We care about social and collaborative systems
 - Too many of these systems are ineffective
 - Too hard to design and build
 - Want to move from gambling to art to design and engineering

Example: Online Community



9

Example: Recommender Engineering

- » A decade of work (so far)
 - McNee's analysis framework
 - Ekstrand's tools and experiments
 - And dozens of other experiments (ours and others')
- » Goal: to make building a recommender system more like building a bridge than like painting abstract art

Generalizability and Validity

- » The Point of Theory-Building Research
- » Internal Validity
- » External Validity

The Importance of Claims

- » Thanks to William Newman and Bonnie John
 - Contribution-Based Reviewing
 - Claim-Based Research Design

OBSERVATION, ANALYSIS, EXPERIMENTATION

Rule #1:
Think Like the Lone Ranger



If You Love Experiments, Don't Waste Them!

» Get Grounding First

- Review Literature
- Understand Theory
- Usage Studies
- Data Analyses

The Power of Observation

- » Experiments mess around with stuff
 - To design them, you should understand current practice
- » Example: Interviews of MovieLens users ...

Analysis and “Big Data”

- » Warning: I hate the term “Big Data”
- » I don’t hate analytics per se, but ...
 - I do hate analytics for their own sake
- » Where does this technique work well?
 - Diagnosing a problem (Wikipedia, ...)
 - Understanding the context, prevalence, details (gaming ...)
 - Developing a solution (recommenders, ...)

Broader Roles for Analytics

- » Exploratory Diagnosis
 - Be careful
- » Answering Questions ...
 - But where do the questions come from?
 - Theory
 - Observation
 - Design
 - Practice

OWN VS. INHABIT; LAB VS. FIELD

Own vs. Inhabit

- | | |
|--|---|
| <p>» Own Infrastructure</p> <ul style="list-style-type: none">• Substantial investment• Greater control (internal validity)• Wider range of designs, interactions• Harder to generalize across many platforms | <p>» Experiment “Out”</p> <ul style="list-style-type: none">• Cheaper• Existing community • Constraints• Cooperation• Consent • Generalizability and face validity |
|--|---|

Thoughts on Research Infrastructure

- » Having a system is not the same as an experimental framework
 - Logging
 - A/B/... Testing
 - Tracking Treatments/Subjects/Consent

Online Lab vs. Field Experiments

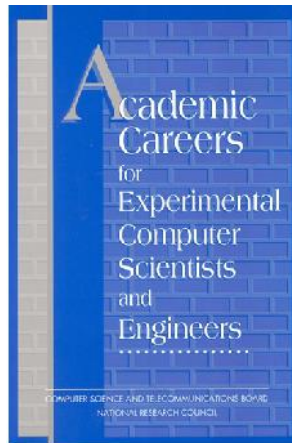
- » The difference
 - Validity focus
- » Examples
 - New user experience
 - Explanations
 - Algorithmic preferences
 - ...

THOSE CONCLUDING THOUGHTS

A Few Thoughts About Platforms

- » Platforms are Hard and Expensive
 - Lots of Software
 - Getting to, Keeping, and Supporting a Critical Mass of Users
- » Critical to Experimental Research
- » Largely Unsupported and Unrewarded
 - Hard to Get Funding
 - Publication Output per Hour Invested

We Need to Do Something ...



- » Industry Openness
 - Great idea; hard
- » Greater Support, Rewards and Incentives
 - Shift from arithmetic to reading?

Experiments are Hard

- » Every step along the way risks corrupting the resulting data ...
 - Design issues
 - Implementation issues
 - Recruiting/Consent/Participant issues
 - Tracking/Follow-up/Analysis
- » May need more support to teach experimentation earlier ...

Pulling this All Together

- » Think about research impact ...
 - Does your interest need experimental evidence and exploration?
- » Need teams ...
 - Designers and Builders
 - Observers and Analysts
 - Experimentalists and Theorists
 - Domain Experts and Generalists

Acknowledgements

- » This work I've discussed is supported by grants from the National Science Foundation, and by grants from Net Perceptions and Google.
- » Many people have contributed ideas, time, and energy to this project.

The Experimentalist's Manifesto

Joseph A. Konstan
University of Minnesota

konstan@cs.umn.edu
<http://www.grouplens.org>

grouplens | UNIVERSITY OF MINNESOTA

grouplens

UNIVERSITY OF MINNESOTA