

“Progress in Network Science” Panel Session

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USMA Network Science Workshop

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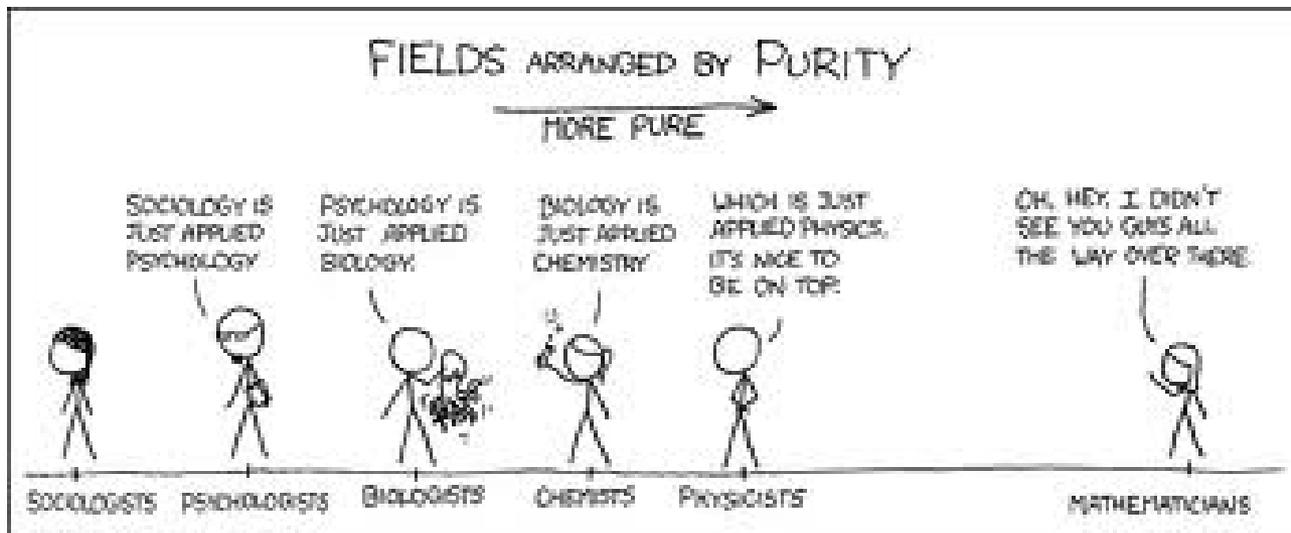
Sentiments I

What I heard four years ago:

- Is there such a thing as network science?

Reduction

- **Mathematician:** Network science is just graph theory.
- **Social Scientists:** What's the big deal? We've been doing social network analysis for decades.
- **Computer Scientists:** What's the big deal? We've been studying [computer] networks for decades?



YOU'RE TRYING TO PREDICT THE BEHAVIOR
OF <COMPLICATED SYSTEM>? JUST MODEL
IT AS A <SIMPLE OBJECT>, AND THEN ADD
SOME SECONDARY TERMS TO ACCOUNT FOR
<COMPLICATIONS I JUST THOUGHT OF>.

EASY, RIGHT?

SO, WHY DOES <YOUR FIELD> NEED
A WHOLE JOURNAL, ANYWAY?



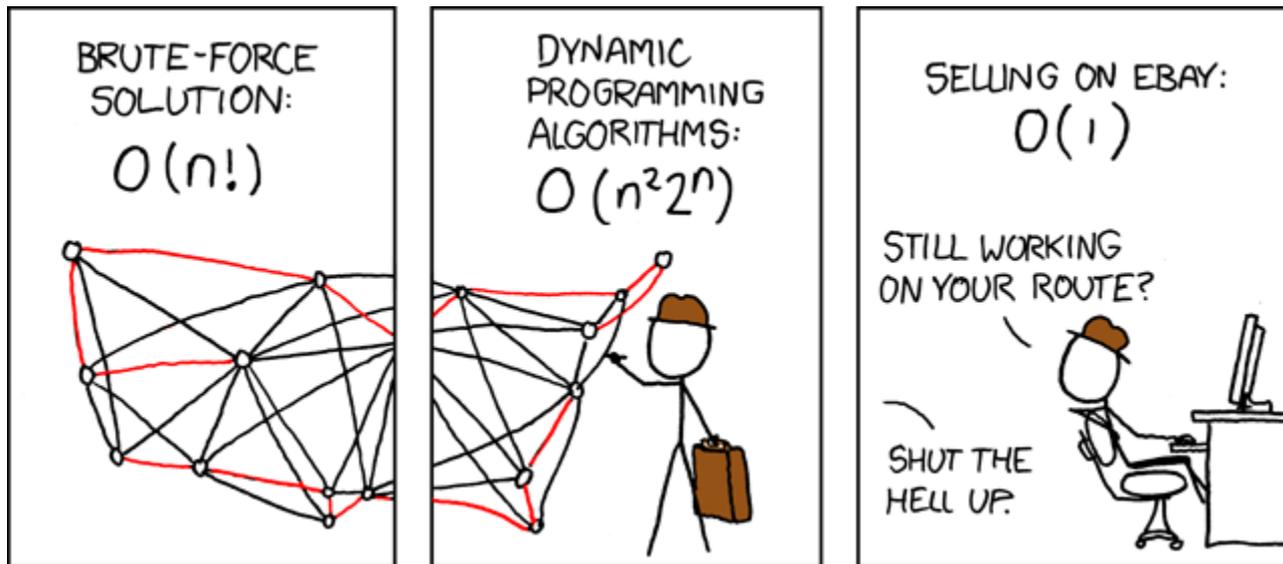
LIBERAL-ARTS MAJORS MAY BE ANNOYING SOMETIMES,
BUT THERE'S *NOTHING* MORE OBNOXIOUS THAN
A PHYSICIST FIRST ENCOUNTERING A NEW SUBJECT.

Sentiments II

What I heard in the past two days:

- Network science isn't a science (yet).
- We're still not quite sure what network science is, but we are certain that we're doing it wrong.
- It may not be perfect, but it's useful.

Perspective



Trends

Algorithms

- Centrality Measures
- Map-Reduce

Models

- ERGM/Statistical Models
- Multi-layer

Dynamics

- Diffusion/Spread of Ideas
- Structure over time

Tools

- Automation
- Visualization

Applications

- Cyber
- Intelligence
- Twitter / Social Media

Context

Big Data

Cloud

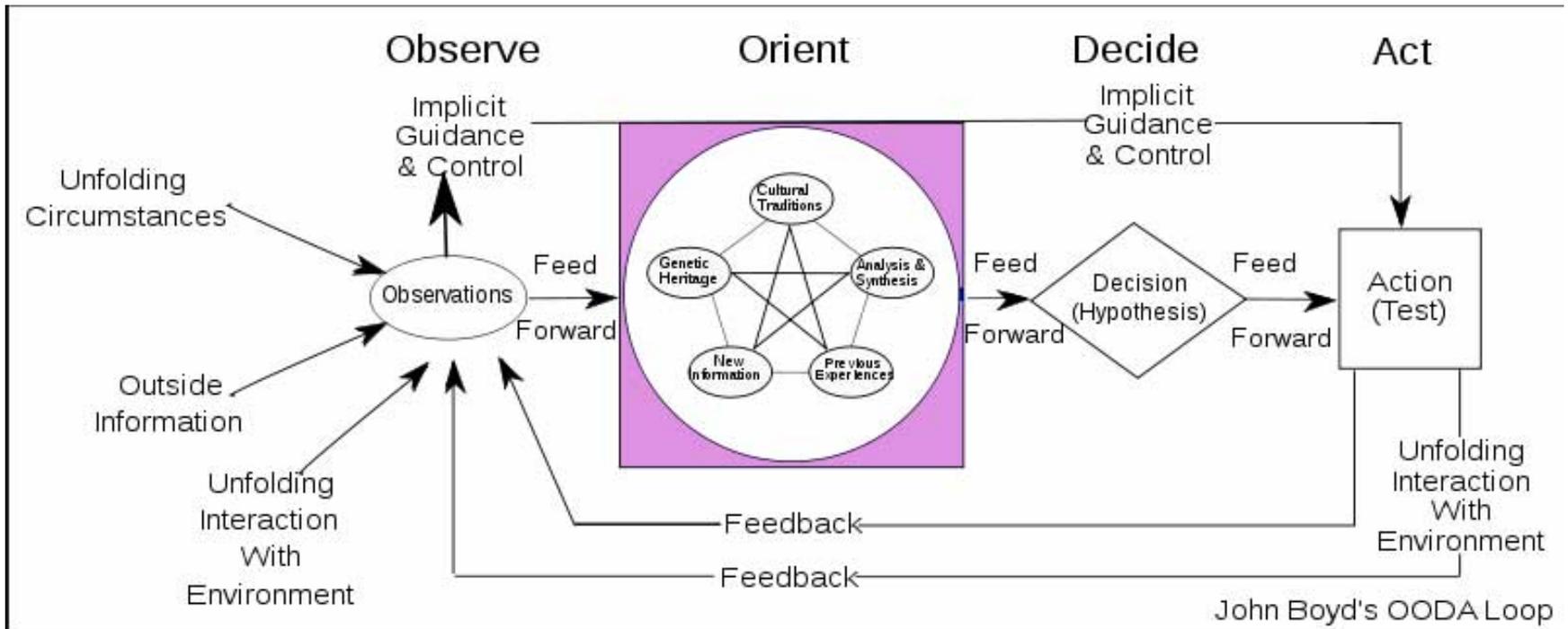
Cyber

Mobile

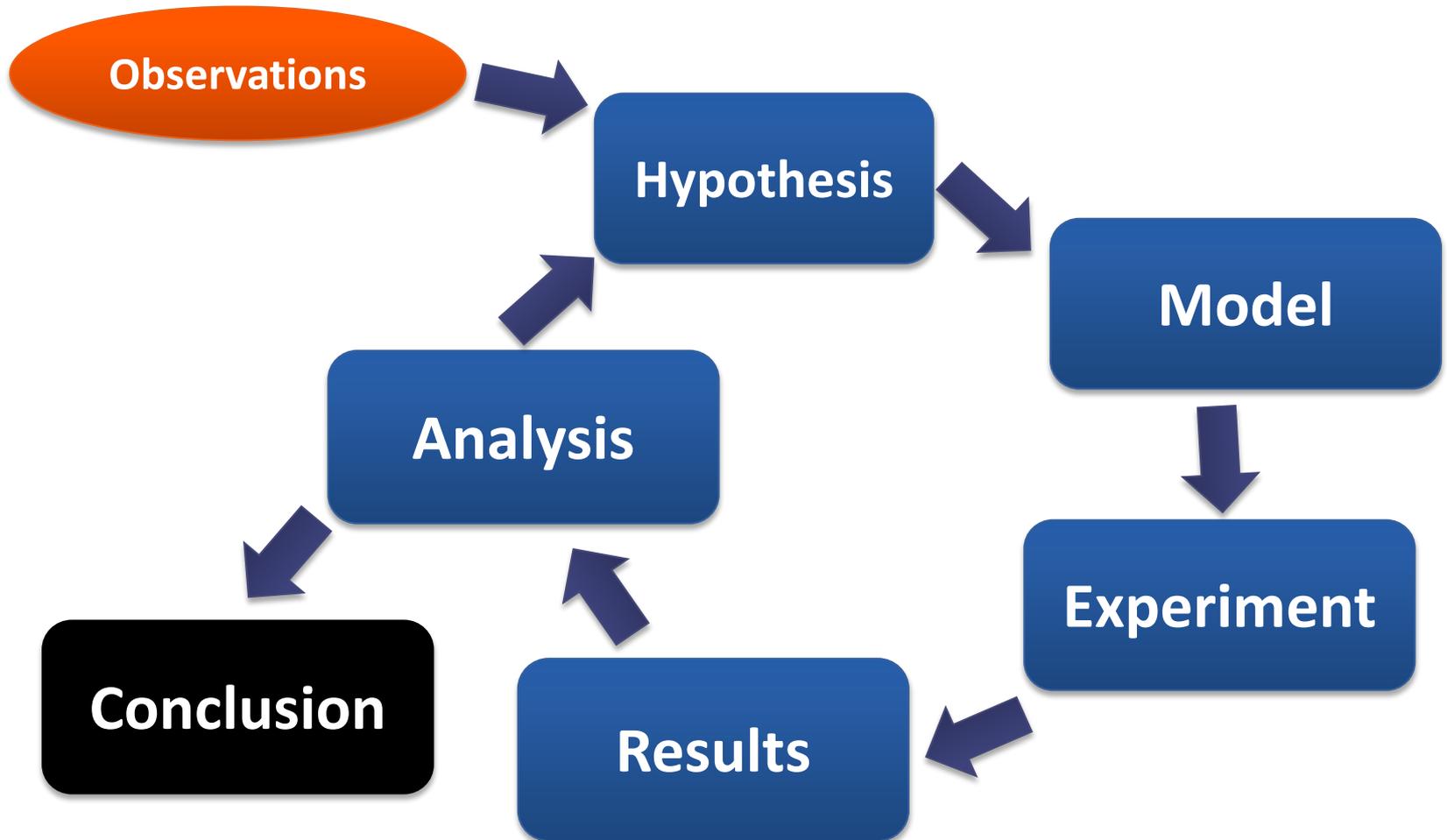
Web Apps

Education

Acceleration



Automation



2022

- What would change about the way practitioners work if *tools enforced assumptions*?
- What would change about the way we work if we could create a hypothesis, build a model, conduct an experiment, and get results *in less than 30 minutes*?