

Social Science In Time

Kevin Munger

EUI

- What is the goal of social science?

- What is the goal of social science?
- To produce academic papers and books!

- What is the goal of social science?
- To produce academic papers and books!
- The social world is *massive* and newly tractable at scale

- What is the goal of social science?
- To produce academic papers and books!
- The social world is *massive* and newly tractable at scale
- Project this behavior down into the much lower-dimensional space of human-language-encoded *theory*

- What is the goal of social science?
- To produce academic papers and books!
- The social world is *massive* and newly tractable at scale
- Project this behavior down into the much lower-dimensional space of human-language-encoded *theory*
- Operations in lower-dim space (synthesize theory etc)

- What is the goal of social science?
- To produce academic papers and books!
- The social world is *massive* and newly tractable at scale
- Project this behavior down into the much lower-dimensional space of human-language-encoded *theory*
- Operations in lower-dim space (synthesize theory etc)
- Project back up into the high-dimensional space of social reality

Tweetment Effects on the Tweeted

Tweetment Effects on the Tweeted

- Experiment to reduce racist harassment

Tweetment Effects on the Tweeted

- Experiment to reduce racist harassment
- Sample of white male Twitter users in 2015, sent them messages with bots

Tweetment Effects on the Tweeted

- Experiment to reduce racist harassment
- Sample of white male Twitter users in 2015, sent them messages with bots
- Varied status and group identity

Tweetment Effects on the Tweeted

- Experiment to reduce racist harassment
- Sample of white male Twitter users in 2015, sent them messages with bots
- Varied status and group identity
- What is the theory?

Tweetment Effects on the Tweeted

- Experiment to reduce racist harassment
- Sample of white male Twitter users in 2015, sent them messages with bots
- Varied status and group identity
- What is the theory?
 - Social pressure exists?

Tweetment Effects on the Tweeted

- Experiment to reduce racist harassment
- Sample of white male Twitter users in 2015, sent them messages with bots
- Varied status and group identity
- What is the theory?
 - Social pressure exists?
 - Social pressure from high-status in-group members is more effective?

Tweetment Effects on the Tweeted

- Experiment to reduce racist harassment
- Sample of white male Twitter users in 2015, sent them messages with bots
- Varied status and group identity
- What is the theory?
 - Social pressure exists?
 - Social pressure from high-status in-group members is more effective?
 - The accounts who were treated by Bot C sent a few hundred fewer racial slurs in October 2015 than the accounts not treated by any bot?

- Induction: Knowledge is from past, applied in future

- Induction: Knowledge is from past, applied in future
- "Theory" means parameterizing the social world; what about non-parametric/"agnostic" approaches?

- Induction: Knowledge is from past, applied in future
- "Theory" means parameterizing the social world; what about non-parametric/"agnostic" approaches?
- Natural language already parameterizes!

- Induction: Knowledge is from past, applied in future
- "Theory" means parameterizing the social world; what about non-parametric/"agnostic" approaches?
- Natural language already parameterizes! Even perception involves a model

- Induction: Knowledge is from past, applied in future
- "Theory" means parameterizing the social world; what about non-parametric/"agnostic" approaches?
- Natural language already parameterizes! Even perception involves a model
- Academic research takes place as time advances

- Induction: Knowledge is from past, applied in future
- "Theory" means parameterizing the social world; what about non-parametric/"agnostic" approaches?
- Natural language already parameterizes! Even perception involves a model
- Academic research takes place as time advances
- As internally valid studies accumulate, the world changes

- Induction: Knowledge is from past, applied in future
- "Theory" means parameterizing the social world; what about non-parametric/"agnostic" approaches?
- Natural language already parameterizes! Even perception involves a model
- Academic research takes place as time advances
- As internally valid studies accumulate, the world changes
- "Rate of Change" of a system; "Knowledge Decay Parameter"

Empirical Knowledge Aggregation and “Concept Drift”

Empirical Knowledge Aggregation and “Concept Drift”

- Generated lots of local, causal knowledge

Empirical Knowledge Aggregation and “Concept Drift”

- Generated lots of local, causal knowledge
- Out-of-sample prediction: use some machine learner, aggregate the previous knowledge generated over time

Empirical Knowledge Aggregation and “Concept Drift”

- Generated lots of local, causal knowledge
- Out-of-sample prediction: use some machine learner, aggregate the previous knowledge generated over time
- “Temporal validity” is related to “concept drift”: changing relationship between a construct and the data that exist

Empirical Knowledge Aggregation and “Concept Drift”

- Generated lots of local, causal knowledge
- Out-of-sample prediction: use some machine learner, aggregate the previous knowledge generated over time
- “Temporal validity” is related to “concept drift”: changing relationship between a construct and the data that exist
- Need rich, high-latency data to detect and ameliorate concept drift within the same dataset — impossible for nearly any social science question

Theoretical Knowledge Aggregation and “Concept Drift”

Theoretical Knowledge Aggregation and “Concept Drift”

- Meta-science: journal article is a media technology

Theoretical Knowledge Aggregation and “Concept Drift”

- Meta-science: journal article is a media technology
- The “original sin” of social science is the uncritical adoption of the institutions and practices of natural science

Theoretical Knowledge Aggregation and “Concept Drift”

- Meta-science: journal article is a media technology
- The “original sin” of social science is the uncritical adoption of the institutions and practices of natural science
- eg we should abandon “replication” except in certain cases

Theoretical Knowledge Aggregation and “Concept Drift”

- Meta-science: journal article is a media technology
- The “original sin” of social science is the uncritical adoption of the institutions and practices of natural science
- eg we should abandon “replication” except in certain cases
- Implicit assumptions underlying citational practices and even the mapping between words and social phenomena

Theoretical Knowledge Aggregation and “Concept Drift”

- Meta-science: journal article is a media technology
- The “original sin” of social science is the uncritical adoption of the institutions and practices of natural science
- eg we should abandon “replication” except in certain cases
- Implicit assumptions underlying citational practices and even the mapping between words and social phenomena
- “XXXX (2015) find that using Facebook increases political knowledge, but YYYY (2022) find the opposite. Future research will adjudicate which is correct”

Theoretical Limits

- Think about the *aggregate* amount of knowledge we produce rather than “more perfect papers”
- Hofman, Sharma and Watts (2017) calls us to characterize “theoretical limits to predictive accuracy”

Theoretical Limits

- Think about the *aggregate* amount of knowledge we produce rather than “more perfect papers”
- Hofman, Sharma and Watts (2017) calls us to characterize “theoretical limits to predictive accuracy”
- Establish *pragmatic* limits to predictive accuracy or theoretical specificity

Theoretical Limits

- Think about the *aggregate* amount of knowledge we produce rather than “more perfect papers”
- Hofman, Sharma and Watts (2017) calls us to characterize “theoretical limits to predictive accuracy”
- Establish *pragmatic* limits to predictive accuracy or theoretical specificity
- Knowledge decay/rate of change of the system

Theoretical Limits

- Think about the *aggregate* amount of knowledge we produce rather than “more perfect papers”
- Hofman, Sharma and Watts (2017) calls us to characterize “theoretical limits to predictive accuracy”
- Establish *pragmatic* limits to predictive accuracy or theoretical specificity
- Knowledge decay/rate of change of the system
- Scale of the system/social science

- Humility enables us to select tractable, “Goldilocks” problems (Watts, 2017)

- Humility enables us to select tractable, “Goldilocks” problems (Watts, 2017)
- For fast-moving systems, we want to ask *why* something is or *what it does*

- Humility enables us to select tractable, “Goldilocks” problems (Watts, 2017)
- For fast-moving systems, we want to ask *why* something is or *what it does*
- Pragmatic limit may in fact be *what is*; the method is Quantitative Description

- Co-founded (with Andy Guess and Eszter Hargittai) the *JQD:DM*

- Co-founded (with Andy Guess and Eszter Hargittai) the *JQD:DM*
- “The journal publishes quantitative descriptive social science. It does not publish research that makes causal claims.”

- Co-founded (with Andy Guess and Eszter Hargittai) the *JQD:DM*
- “The journal publishes quantitative descriptive social science. It does not publish research that makes causal claims.”
- Descriptive knowledge is necessary to discipline the un-rigorous aspects of the scientific process

- Co-founded (with Andy Guess and Eszter Hargittai) the *JQD:DM*
- “The journal publishes quantitative descriptive social science. It does not publish research that makes causal claims.”
- Descriptive knowledge is necessary to discipline the un-rigorous aspects of the scientific process
 - Academic agenda setting

- Co-founded (with Andy Guess and Eszter Hargittai) the *JQD:DM*
- “The journal publishes quantitative descriptive social science. It does not publish research that makes causal claims.”
- Descriptive knowledge is necessary to discipline the un-rigorous aspects of the scientific process
 - Academic agenda setting
 - “Big Enough” question for PNAS/APSR/JoC/AJS?

- Co-founded (with Andy Guess and Eszter Hargittai) the *JQD:DM*
- “The journal publishes quantitative descriptive social science. It does not publish research that makes causal claims.”
- Descriptive knowledge is necessary to discipline the un-rigorous aspects of the scientific process
 - Academic agenda setting
 - “Big Enough” question for PNAS/APSR/JoC/AJS?
 - Null hypothesis generation

- Co-founded (with Andy Guess and Eszter Hargittai) the *JQD:DM*
- “The journal publishes quantitative descriptive social science. It does not publish research that makes causal claims.”
- Descriptive knowledge is necessary to discipline the un-rigorous aspects of the scientific process
 - Academic agenda setting
 - “Big Enough” question for PNAS/APSR/JoC/AJS?
 - Null hypothesis generation
- Evidentiary chain is only as strong as its weakest link

- Nominal justification is *epistemological*

- Nominal justification is *epistemological*
- Cartwright: “no gold standard” of causal inference

- Nominal justification is *epistemological*
- Cartwright: “no gold standard” of causal inference
- Generalizability crisis: how to synthesize/apply

- Nominal justification is *epistemological*
- Cartwright: “no gold standard” of causal inference
- Generalizability crisis: how to synthesize/apply
- Actual advantage is *ontological*: create novel states of the world

- Nominal justification is *epistemological*
- Cartwright: “no gold standard” of causal inference
- Generalizability crisis: how to synthesize/apply
- Actual advantage is *ontological*: create novel states of the world
- Store knowledge *locally*, embedded in actors/institutions

- Nominal justification is *epistemological*
- Cartwright: “no gold standard” of causal inference
- Generalizability crisis: how to synthesize/apply
- Actual advantage is *ontological*: create novel states of the world
- Store knowledge *locally*, embedded in actors/institutions
- Campbell “The Experimenting Society”: Scale up, permanent experimentation, Democracy not Technocracy

- Nominal justification is *epistemological*
- Cartwright: “no gold standard” of causal inference
- Generalizability crisis: how to synthesize/apply
- Actual advantage is *ontological*: create novel states of the world
- Store knowledge *locally*, embedded in actors/institutions
- Campbell “The Experimenting Society”: Scale up, permanent experimentation, Democracy not Technocracy

Thank You!

Kevin Munger
kmm7999@psu.edu

References
