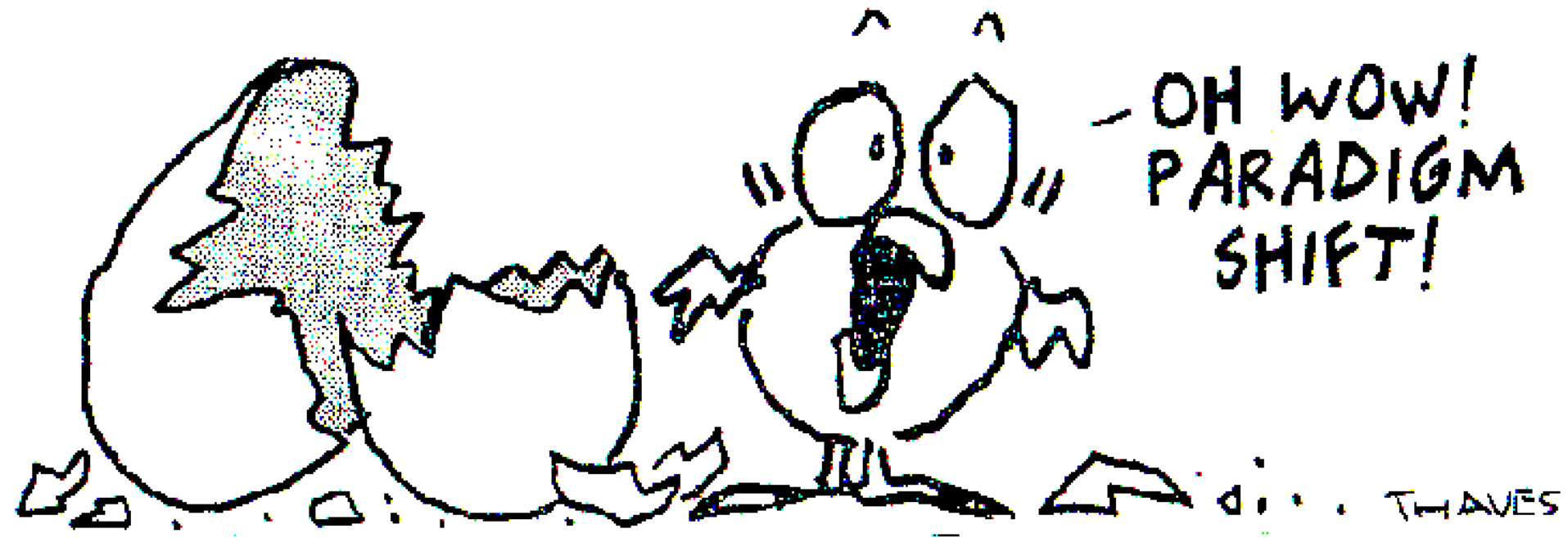


Soc 5: Evaluation of Evidence

Lecture 3: The Creation of Sociological Knowledge



Agenda

- Variables Review and catch up
 - Note: more Unit of Analysis practice at end of Lecture 2 slides
- Research Designs and Time
- The whip-tail lizard
- Paradigms and Theories

Review from Last Class

- **Unit of analysis:** the type of social actor being analyzed
 - Individual, group, organization, region, nation, social artifact...
- **Attribute:** a characteristic or quality of a social actor (individual, family, class, group, community, region, organization, industry,)
 - E.g., 22-year-old female, sophomore, Democrat, Catholic, biology major.
- **Variable:** a logical grouping of attributes across units
 - Gender = male, female, transgendered
 - Class = freshman, sophomore, etc.
 - Party = Democrat, Republican, etc.
 - Age = 0, 1, 2, 3,, 90, 91, 92,
 - Religion = Lutheran, Catholic, Muslim, Presbyterian, Jewish, etc.

Uses of Attributes and Variables

- We can describe the distribution of attributes on variables
- We can also find cause/effect relationships of the form variable 1 \rightarrow variable 2
 - Read as “change/difference in variable 1 causes change/difference in variable 2.”
 - Often shown in figures as $X \rightarrow Y$, where X is the cause and Y is the outcome.

In Sum...

- We are interested in ***variables***, specifically, in developing and testing ideas about causal relationships between variables ($X \rightarrow Y$).
- ***People, social groups*** (informal groups, formal organizations, families, etc.), ***and social artifacts*** (flags, songs, novels, etc.) are the carriers of attributes and variables.

Attendance Time

tinyurl.com/soc5attend

- *available from now until end of lecture*
- *sign in using your berkeley.edu account*
- *you will receive email confirmation*

If this does not work for you, sign in on my yellow pad at the end of lecture

How should we gather data?



- At one point in time?
- Over time?
 - Should we track the same entities over time?
 - Should we get new samples for each point in time?

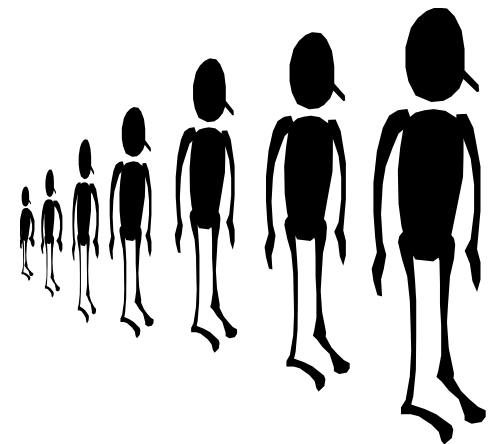
Time



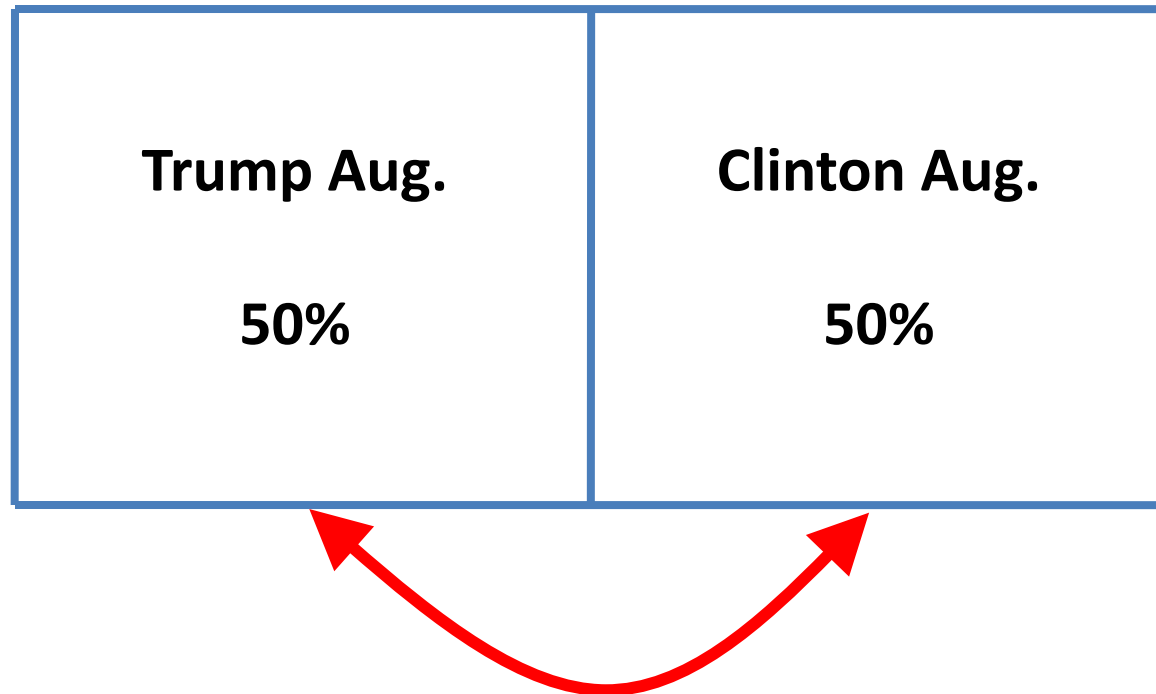
- Cross-sectional studies
- Longitudinal studies
 - Repeated cross-sectional
 - Cohort
 - Panel
- Approximating longitudinal studies

Cross-Sectional

- Snapshot in time
- Pick a sample from a population and measure its members

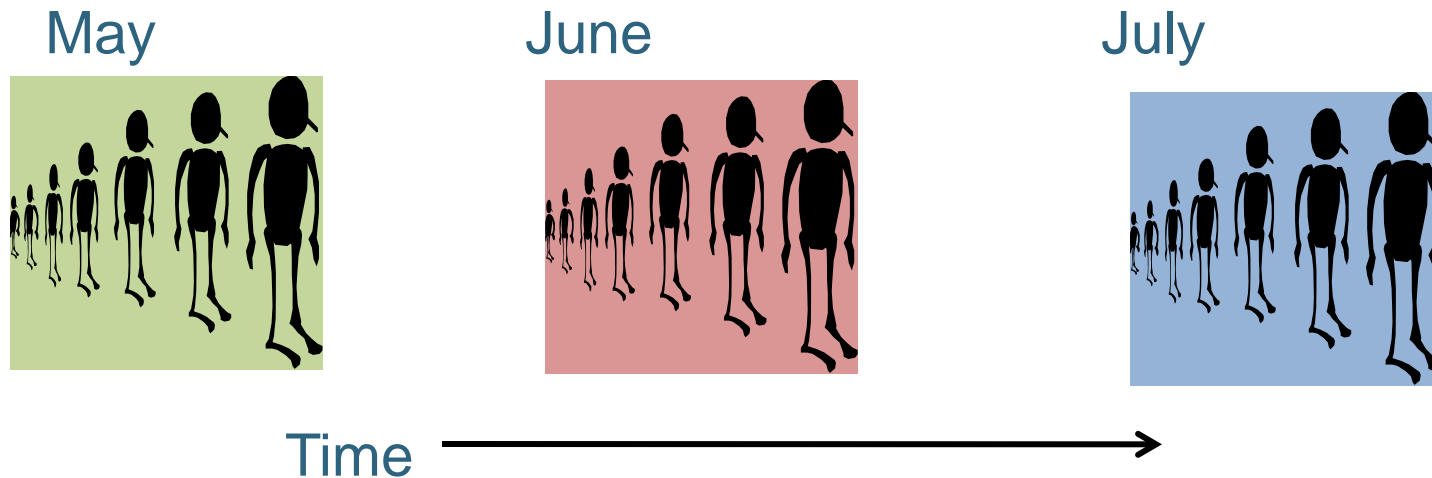


Cross-Sectional Study

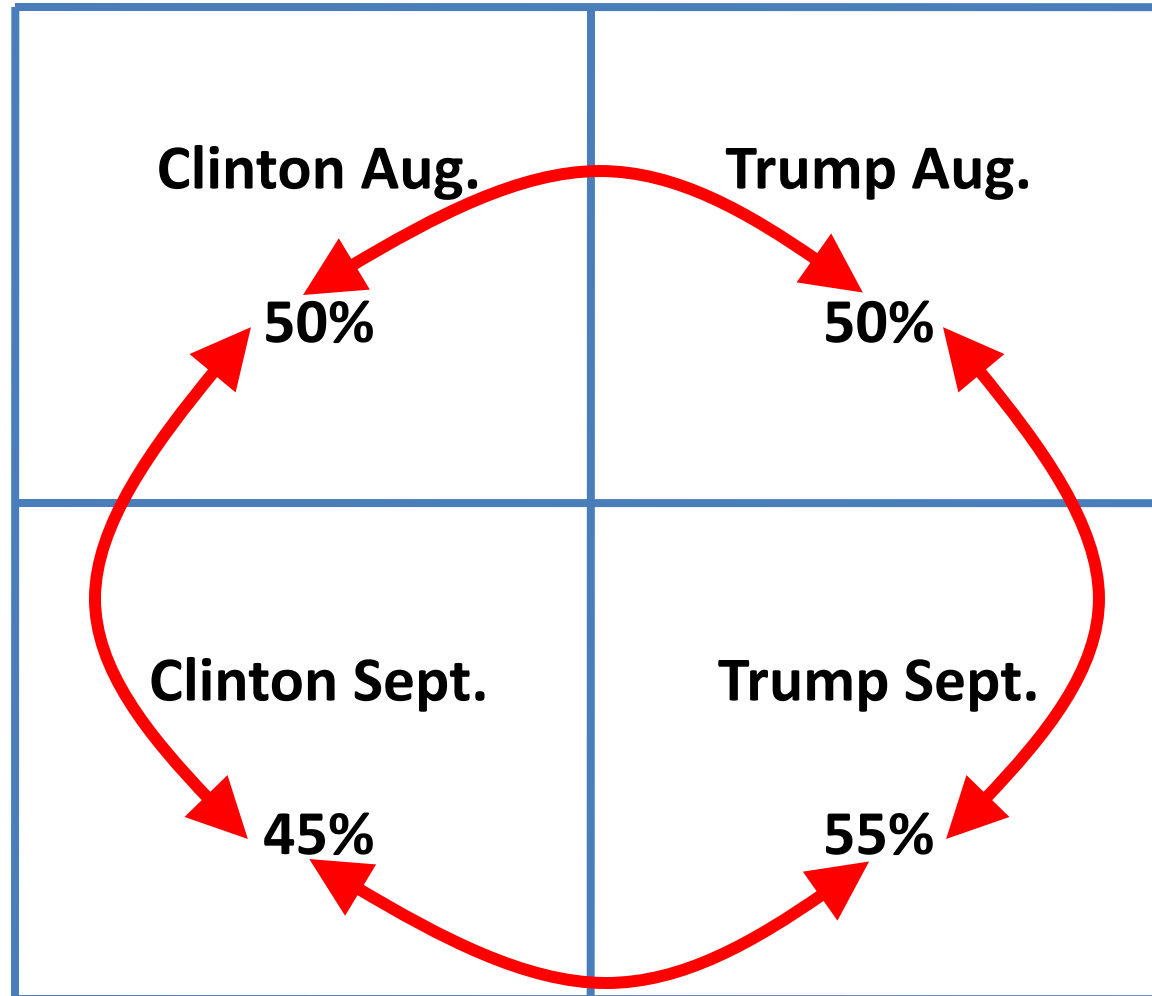


Longitudinal (Repeated Cross-sectional)

- Select different samples over time
- Compare them to detect changes in the population.



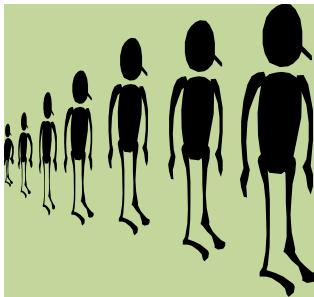
Repeated Cross-sectional Study



Longitudinal (Panel)

- Examine the same set of units over time.
- Detect processes of change at work.

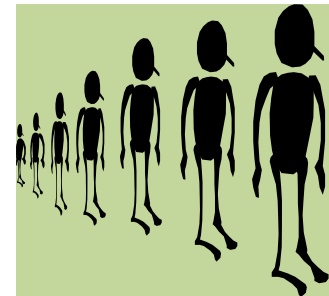
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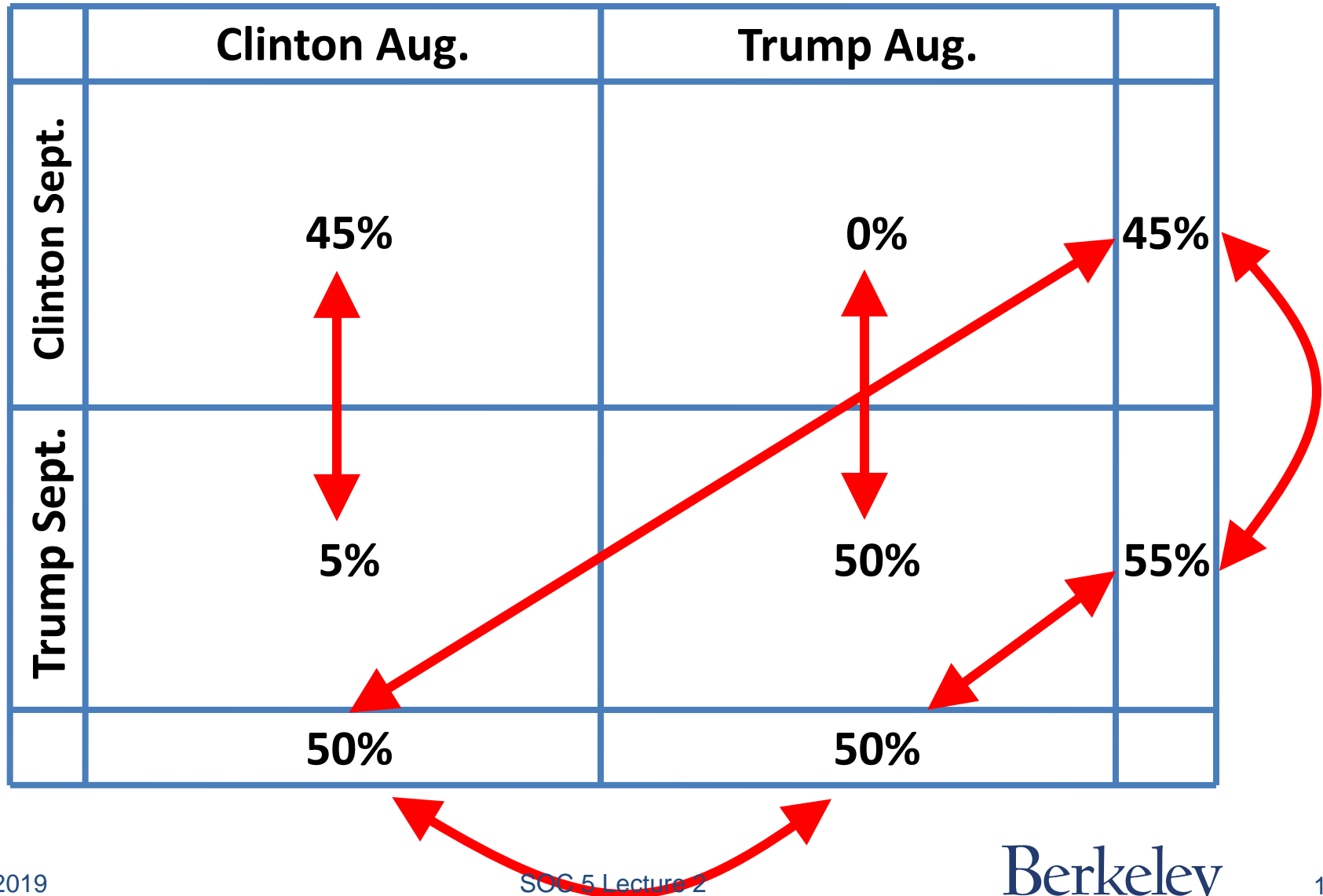


July







Time →





Panel Study (I)







Panel Study (I)

	Clinton Aug.	Trump Aug.	
Clinton Sept.	<div>45%</div> 	<div>0%</div> 	45%
Trump Sept.	<div>5%</div> 	<div>50%</div> 	55%
	50%	50%	

Panel Study (II)

	Clinton Aug.	Trump Aug.	
Clinton Sept.	<div>44%</div> 	<div>1%</div> 	45%
Trump Sept.	<div>6%</div> 	<div>49%</div> 	55%
	50%	50%	

Panel Study (III)

	Clinton Aug.	Trump Aug.	
Clinton Sept.	<div>42%</div> 	<div>3%</div> 	45%
Trump Sept.	<div>8%</div> 	<div>47%</div> 	55%
	50%	50%	

Longitudinal (Cohort)

- Select one cohort (e.g., age group, matriculation group).
- Follow its members over time to detect changes (e.g., maturation).



Comparing Temporal Research Designs

1. Observe units of analysis at 1 point in time?
 - a) Yes → Cross-sectional study
 - b) No → Longitudinal study
2. Longitudinal study: observe different samples over time?
 - a) Yes → Repeated cross-sectional study
 - b) No (same sample over time) → Panel study
3. Longitudinal study: observe a single cohort over time?
 - a) Yes → Cohort study
 - ◆ Repeated cross-sectional cohort study – observe different samples over time (common)
 - ◆ Panel cohort study – observe same sample over time (rare)

Types of Longitudinal Studies

	Observe different samples at different points in time	Observe the same sample at different points in time
Sample from multiple cohorts	Repeated Cross-sectional Studies	Panel Studies
Sample from a single cohort	Repeated Cross-sectional Cohort Studies	Panel Cohort Studies

Approximating Longitudinal

- Compare people of different ages at one point in time.
- Infer that their differences are a result of aging.
- Compare: 1st, 2nd, 3rd, 4th year undergraduates

Match the Research Question to the Research Design

1. How much time did Berkeley students spend working for pay this week?
 - A. Panel
 - B. Cross-sectional
 - C. Repeated cross-sectional
 - D. Repeated cross-sectional cohort
 - E. Panel cohort
 2. How has the time Berkeley students spend working for pay changed since the Great Recession?
 3. How does the time Berkeley students spend working for pay change as they advance from their 1st year to their 4th year?
- Note: Multiple correct answers may be possible.*

Check your answers here: tinyurl.com/y65mv6cj

What about if we wanted to know how the change from first year to senior year changed since the Great Recession?

We would need to compare the trends across multiple cohorts, some of whom attended before the Great Recession and some of whom attended afterwards

Practice Quiz

Today: Paradigms & Theories

Lessons to be learned:

- Sociology, like all sciences, has a well-developed structure of knowledge.
 - **Paradigm:** a framework within which scientists think; an intellectual perspective shared by a group of scientists that guides their formulation of theories and their empirical research.
- These paradigms can be applied to many different levels of analysis: micro, meso, & macro.

Opening Question

- What, exactly, is it that David Crews – the scientist described by Collins & Pinch in the chapter from *The Golem* – does that makes his work interesting science?

Another Question

- How do the dynamics of scientific discovery and testing play out?
 - Who “does” the skepticism and doubtful testing of Crews’s work?
 - Crew himself?
 - Other researchers?

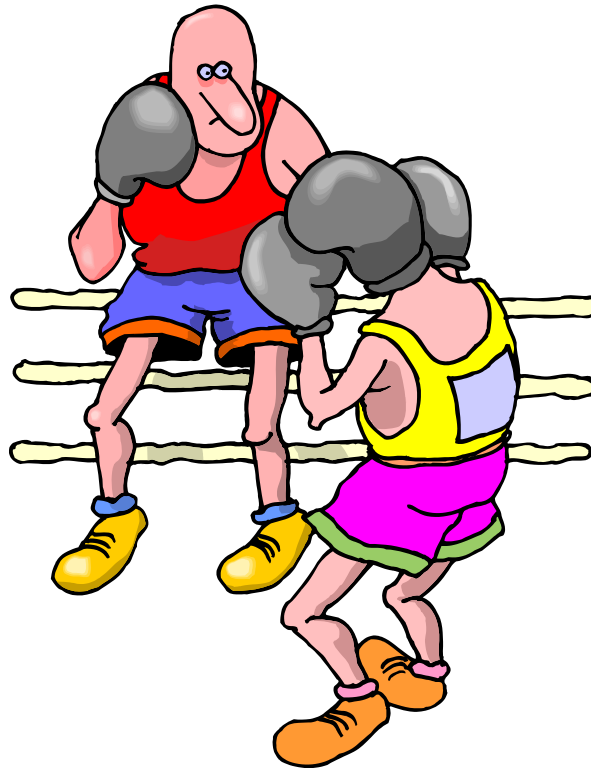
A Follow-Up Question

- How is scientific controversy – the tension between an interesting new theory and the hitherto-conventional wisdom in science – resolved?
 - Do the best data always win?
- Describe the strategies of 2 key players:
 - David Crew – the young Turk
 - Orlando Cuellar – the old guard

“Matters of fact are inseparable from the skills of the scientist used to produce them.” (Collins and Pinch, *The Golem*: 116)

Penultimate Question

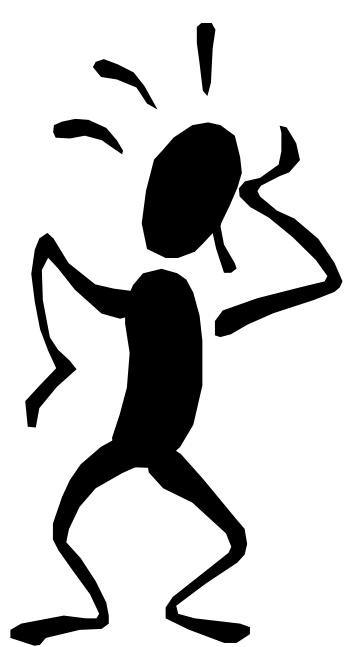
- Don't the facts come out in the end, rendering this sort of undignified posturing moot?



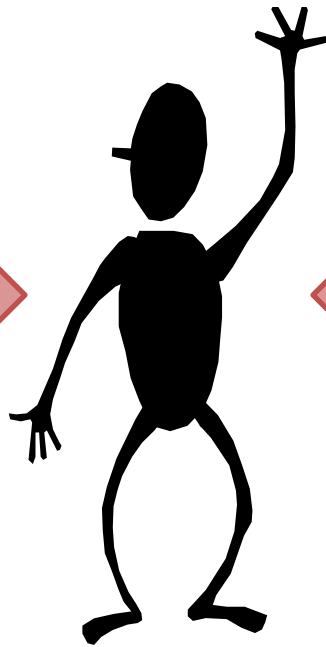
Update

- Crews's interpretation is widely accepted. He & coauthors published several studies of whiptail pseudocopulation in captivity:
 - Reproductively inactive lizards don't pseudocopulate.
 - The same lizard will exhibit both male-like and female-like sexual behavior, depending on where it is in the reproductive cycle.
 - Lizards have been seen pseudocopulating often, so scientists predict they do it at least once in every reproductive cycle when they are housed in groups.
 - The female-like role is exhibited just prior to ovulation. The male-like role is exhibited post-ovulation or pre-ovulation.
 - Lizards who alternate sex roles are 3 times as fecund as lizards housed in isolation.
 - The hormonal profiles of captive and wild lizards are very similar.
 - AND: Pseudocopulation has been observed in the wild.

A Sociological Question: Where in the World is David Crews?



Herpetologists



David Crews

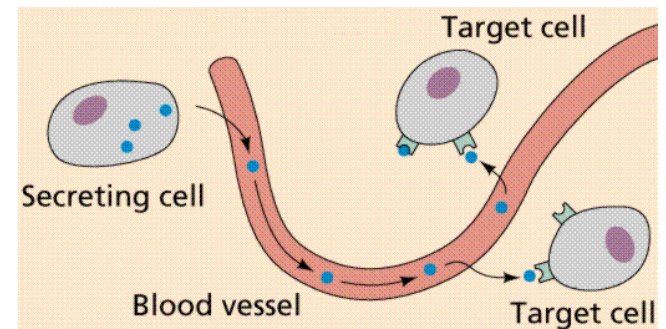


Neuroendocrinologists



9/3/2019

SOC 5 Lecture 3



Scientific Controversies

- They are not resolved by the data (“just the facts, ma’am”).
- Other factors matter as much, if not more:
 - Rhetoric – the ability to write well/convincingly, to emphasize the evidence that supports your theory & downplay what doesn’t
 - Status – the resources you can draw on to emphasize what supports your theory, which are derived from your personal characteristics, history (your own & your discipline’s), & your social network

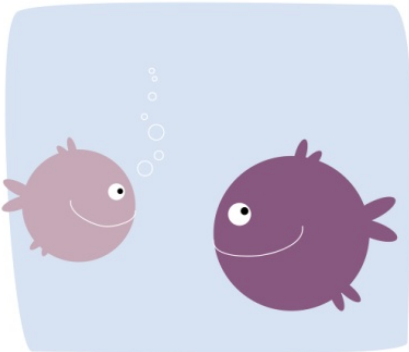
Why do debates like these happen?

- Because scientific research is organized into complex systems of understanding – ***paradigms***.
 - Science that falls within a paradigm is ***normal science***.
 - Science that lies outside the boundaries of any paradigm is highly contested by those who follow accepted paradigms.

Thomas Kuhn, *The Structure of Scientific Revolutions*. University of Chicago Press, 1970.

What is a paradigm?

- A model or system or framework within which scientists think & use to understand some phenomenon.
- Many paradigms are implicit.
 - It's difficult to recognize a paradigm from within.



“A fish doesn’t recognize the water it swims in.”

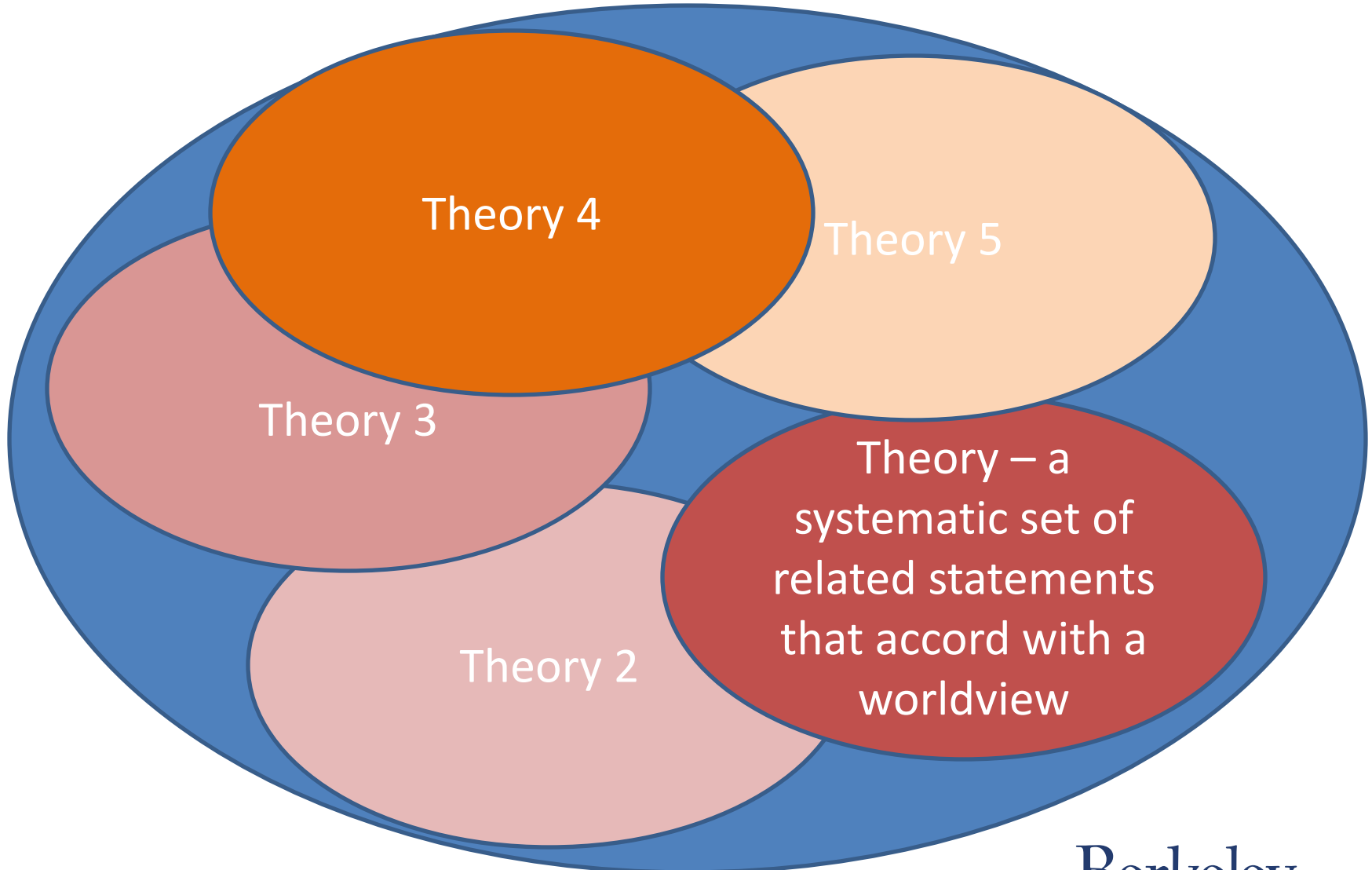
What is a theory?

- **A theory** is a logically interconnected set of propositions, derived from assumptions about essential facts (axioms) and causal mechanisms (unobservables), that yields empirically testable hypotheses about social phenomena.

(Robert Merton, *Social Theory & Social Structure*, 1968: 39-72)

- Theories are what scientists think within paradigms.

Theories and Paradigms



Theory and Research

When (social) scientists do research, we use theories 3 different ways:

1. Theories prevent us from being taken in by flukes.
2. Theories help us make sense of observed patterns in ways that can suggest other possibilities.
3. Theories direct our research efforts, pointing us toward likely discoveries through empirical observation.

Normal Science



- The relatively routine work of scientists experimenting within a paradigm.
 - They slowly accumulate evidence in accord with established theory.
 - They neither challenge nor attempt to test the underlying assumptions of that theory.
- Kuhn (1970) identified this mode of science as being a form of **"puzzle-solving."**

Benefits & Limitations of Paradigm-Driven Normal Science

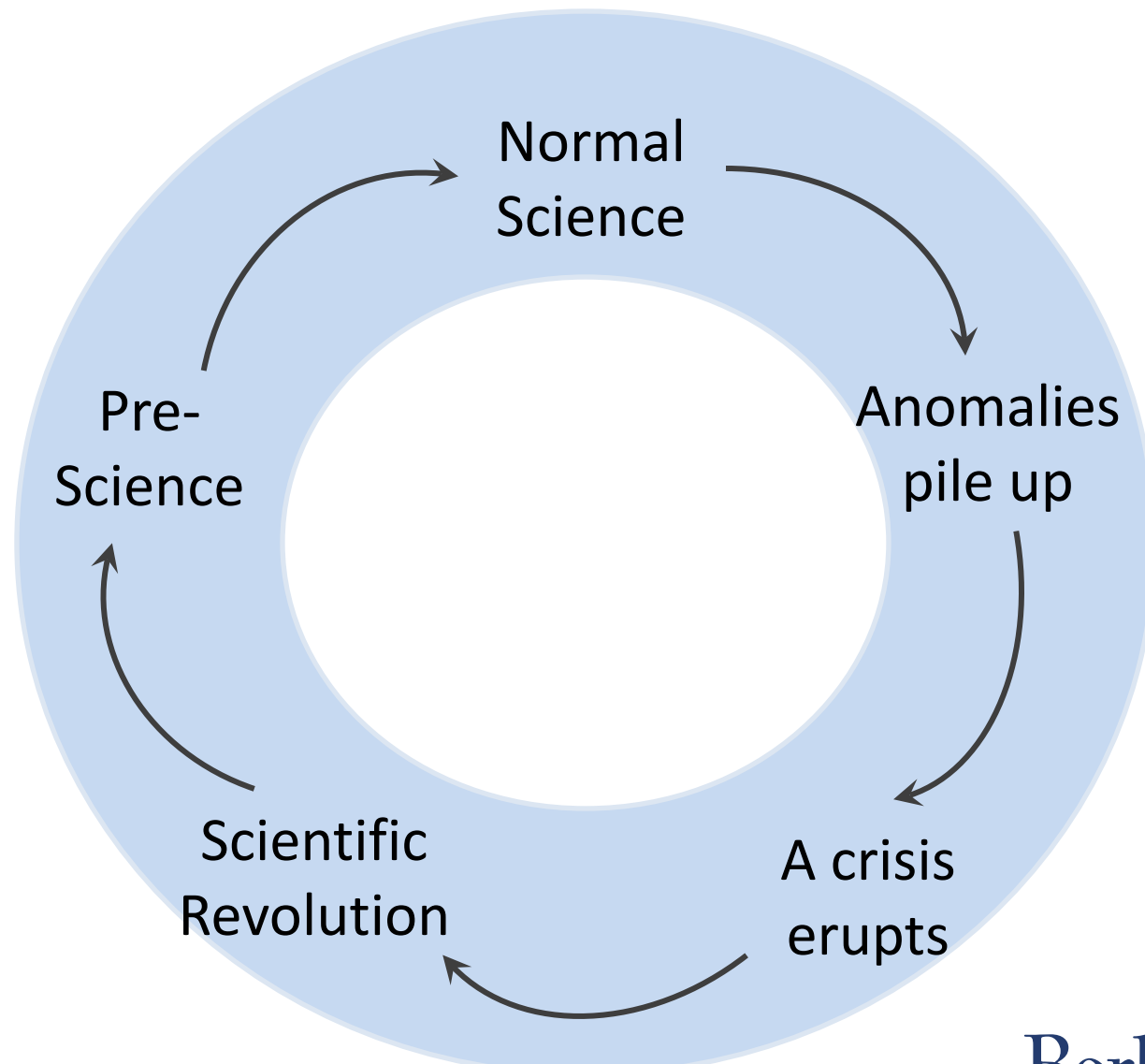
Benefits

- No need to constantly reiterate fundamental assumptions – they can be taken for granted.
- The confidence that you are on the right track encourages scientists to undertake more precise, esoteric, and consuming sorts of work.
 - Fact collection and theory articulation become highly directed activities.
- In sum, the effectiveness and efficiency of research increases greatly.

Limitations

- Normal science does NOT pay attention to new sorts of phenomena.
 - Phenomena that will not fit the paradigm are often not seen at all.
- Scientists do not try to invent new theories.
 - Scientists are often intolerant of new theories invented by others.

How does science evolve?



Paradigms in the Social Sciences

- Normal science???

Paradigms by Level of Analysis

- Macro

- Meso

- Micro



Macrotheory



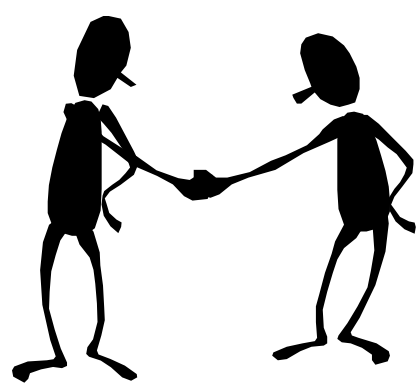
- Deals with large, aggregate entities of society or whole societies.
 - The struggle between classes
 - International relations
 - The diffusion of economic practices and political structures across countries



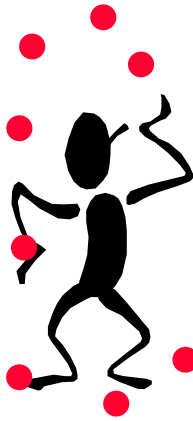
Mesothetheory



- Deals with intermediate-sized units: organizations, social groups/networks, cities/towns/neighborhoods
 - Relationships between a patient and his/her family, on the one hand, and a medical team (doctors, nurses, radiologists, etc.), on the other
 - Peer pressure among students at a school
 - Social cohesion or isolation in a neighborhood



Microtheory



- Deals with issues at the level of individuals and small groups.
 - Dating behavior
 - Jury deliberations
 - Student-faculty interactions
 - The socialization of new employees

Paradigms as Lenses



- Paradigms are never right or wrong
- They are merely different ways of looking at society – **lenses** through which the world is refracted.
- Therefore, paradigms are to be judged as useful or useless in specific situations.

Paradigms in the Social Sciences (4 Examples)

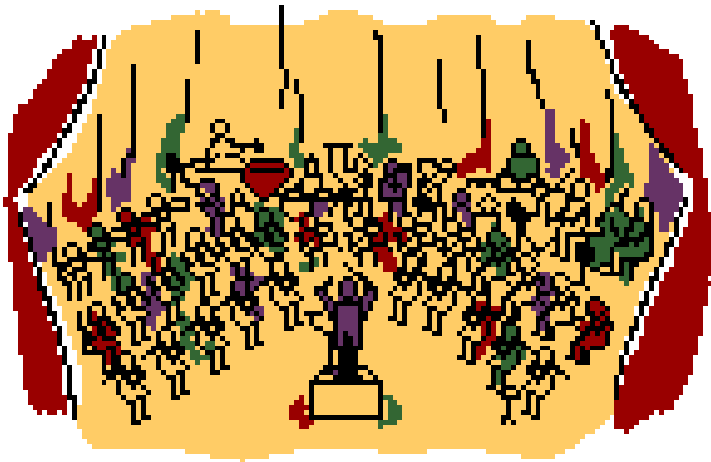
- Paradigms by theoretical focus
 - symbolic interactionism
 - structural functionalism
 - conflict theory
 - rational choice

(Symbolic) Interactionism



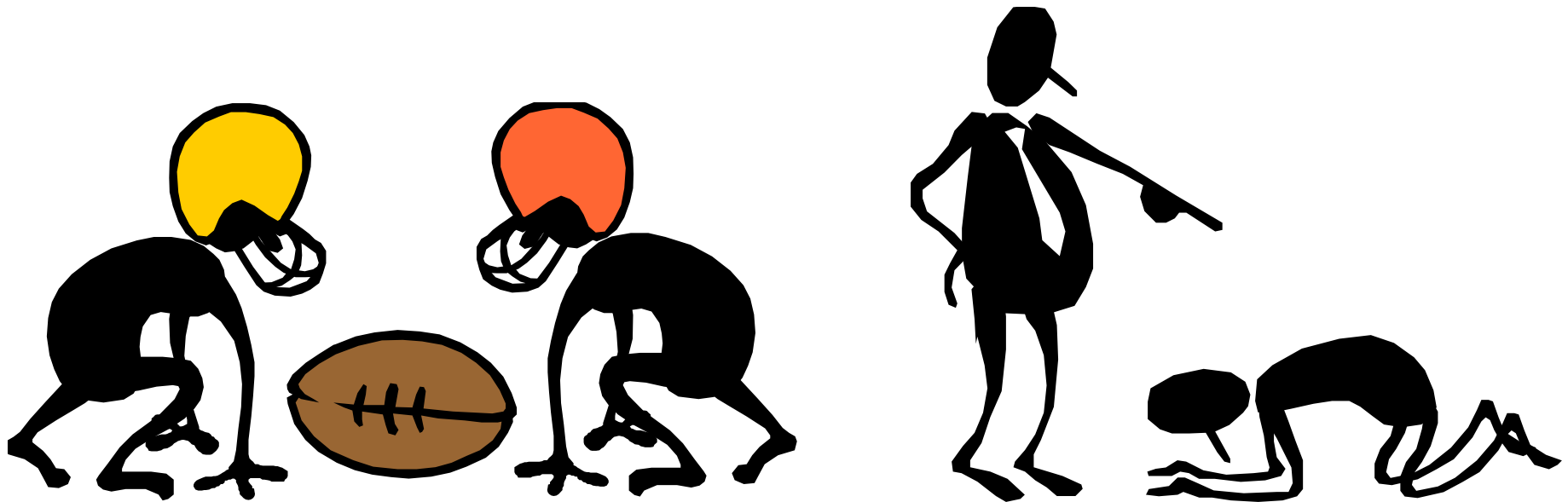
- Meaning is created through interaction.

(Structural) Functionalism



- Every piece has its part to contribute to the system.

Conflict



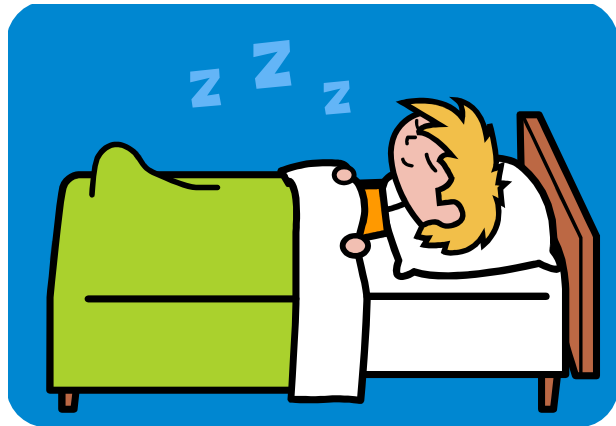
- Social life as attempt to dominate others or avoid being dominated.

Rational Choice



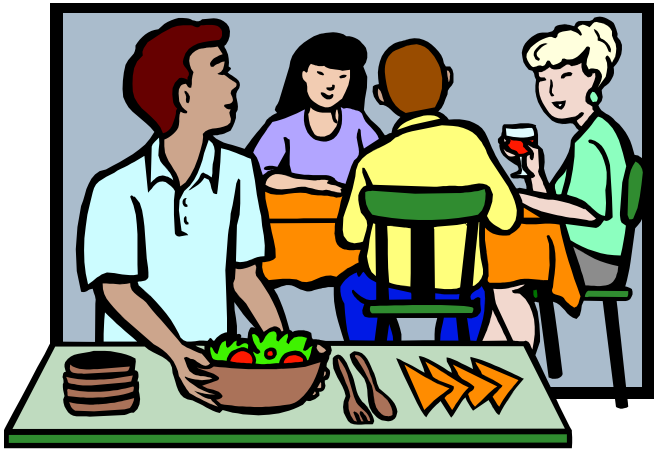
- Individual Decisions are made based on weighing the costs and benefits
- Large-scale patterns are the product of aggregating individual decisions

3 sociologists sell furniture...



- **Interactionist:** “Buy this loveseat so you & your partner can really get close.”
- **Functionalist:** “Every home needs a spare bed for when friends stay over.”
- **Conflict theorist:** “How about a king-size bed? Your neighbours just bought a queen-size bed.”

3 sociologists plan a dinner party...



- **Interactionist:** “How about fondue for an appetizer? That’ll give everyone a chance to get together and chat.”
- **Functionalist:** “Good idea. The cheese will provide lots of protein.”
- **Conflict theorist:** “But some of our fondue forks are longer than others. People will fight for the longest fork.”

3 sociologists spend time in college...



- **Interactionist:** at cocktail parties
- **Functionalist:** programming computers
- **Conflict theorist:** on the debate team

3 sociologists train a puppy



- **Interactionist:** “Shake hands!”
- **Functionalist:** “Fetch!”
- **Conflict theorist:** “Kill!”



Reading for Next Class

- Review Textbook Chapter 2. Research foundations: Linking sociological theory to research.

Independent Var, Dependent Var, Attributes, Unit of Analysis?

Abstract

High-profile cases of police violence—disproportionately experienced by black men—may present a serious threat to public safety if they lower citizen crime reporting. Using an interrupted time series design, this study analyzes how one of Milwaukee's most publicized cases of police violence against an unarmed black man, the beating of Frank Jude, affected police-related 911 calls. Controlling for crime, prior call patterns, and several neighborhood characteristics, we find that residents of Milwaukee's neighborhoods, especially residents of black neighborhoods, were far less likely to report crime after Jude's beating was broadcast. The effect lasted for over a year and resulted in a total net loss of approximately 22,200 calls for service. Other local and national cases of police violence against unarmed black men also had a significant impact on citizen crime reporting in Milwaukee. Police misconduct can powerfully suppress one of the most basic forms of civic engagement: calling 911 for matters of personal and public safety.

Check your answers here: tinyurl.com/y5blmt58

Desmond, Papachristos, and Kirk. 2016. "Police Violence and Citizen Crime Reporting in the Black Community" *American Sociological Review*

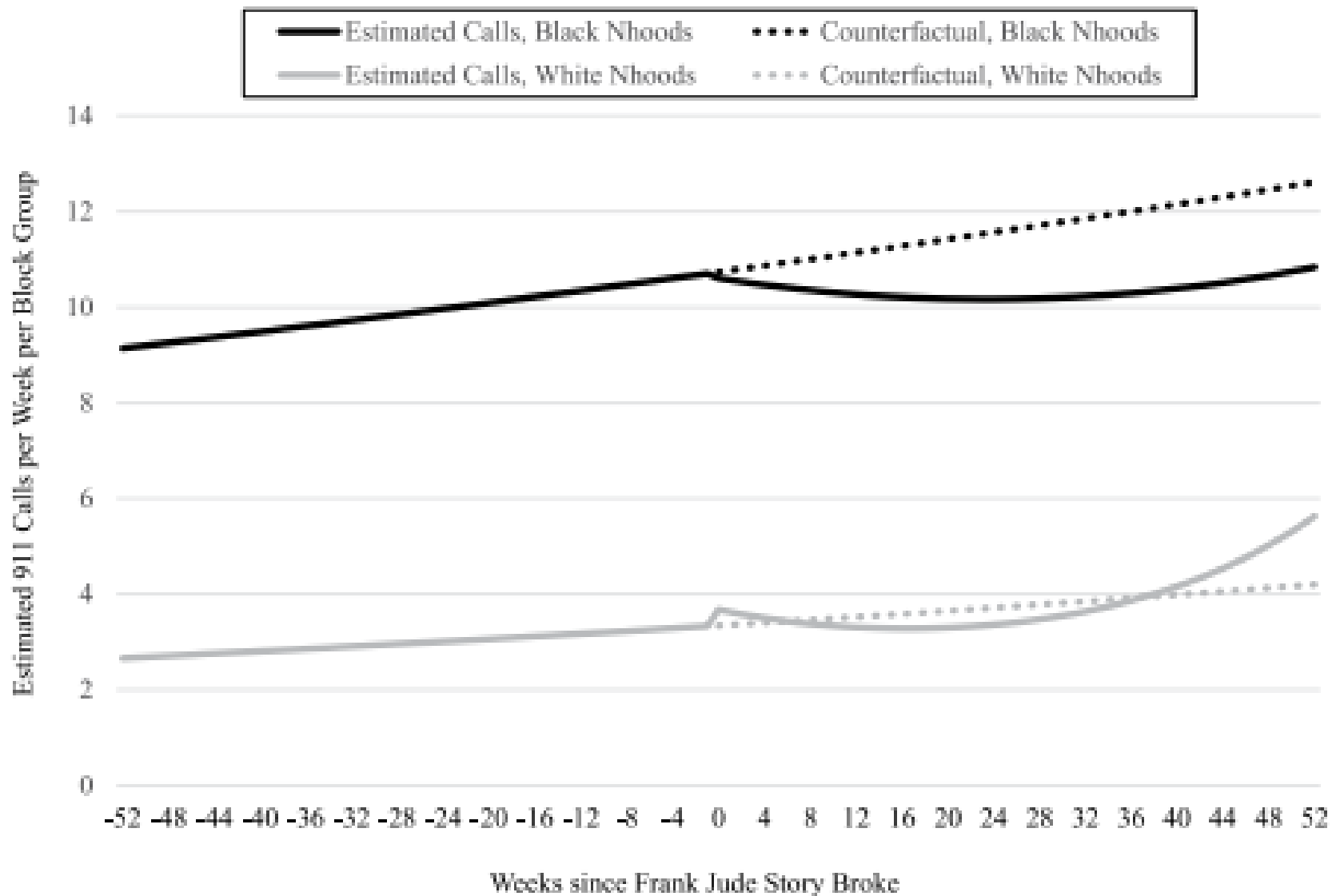


Figure 3. Estimated Number of Weekly 911 Calls Reporting Crime Before and After the Frank Jude Story in White and Black Neighborhoods

Attendance Reminder

tinyurl.com/soc5attend

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