Models

The Joy of Speculation

scientific method

What is it?

Scientific Method

PURPOSE

What do I want to learn?

RESEARCH

Find out as much about your topic as you can.

HYPOTHESIS

Predict what the answer to the problem is.

EXPERIMENT

Design a test to confirm or disprove your hypothesis.

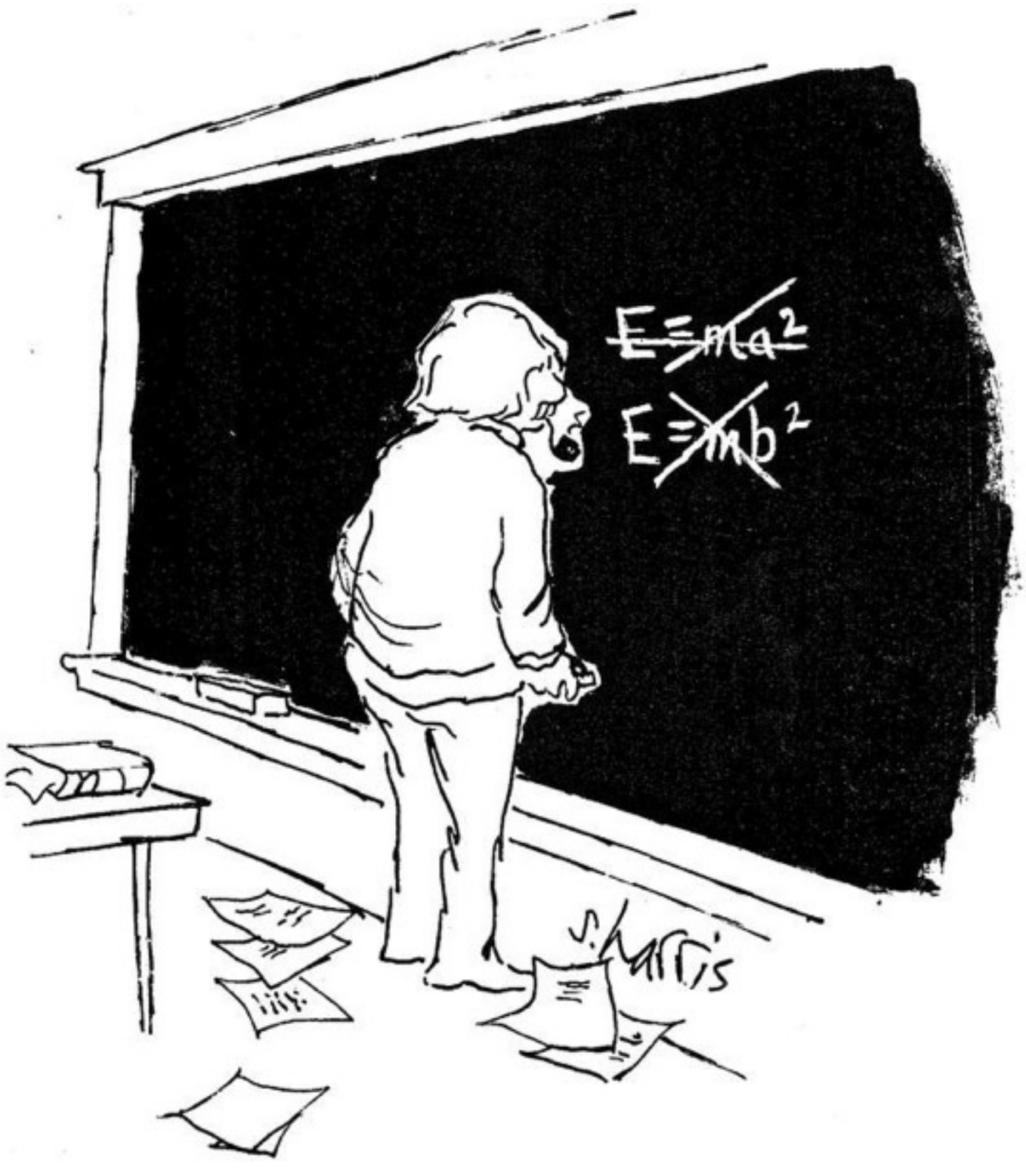
ANALYSIS

Record what happened during the experiment.

CONCLUSION

Was my hypothesis correct?

Is this how science works?



"When I examine myself and my methods of thought, I come close to the conclusion that the gift of imagination has meant more to me than any talent for absorbing absolute knowledge."

–Albert Einstein

In addition to these targets-of-opportunity that occur here and there in historical studies, a problem that obviously needs the joint attention of historian and "behavioral" political scientist is the matter of political change. To the extent that the political scientist is interested in gaining a better understanding of political change—as, say, in the developing countries, to cite an example of pressing importance—he will have to work with theories that can only be fully tested against historical data. Unfortunately, the a-theoretical or even anti-theoretical biases of many historians often make their works a storehouse of data so vast as to be almost unmanageable for the theorist. Rather than demand that every theorist should have to become his own historian, it may be more feasible to demand that more historians should become theorists, or at any rate familiar with the most relevant issues, problems, and methods of the modern social sciences.

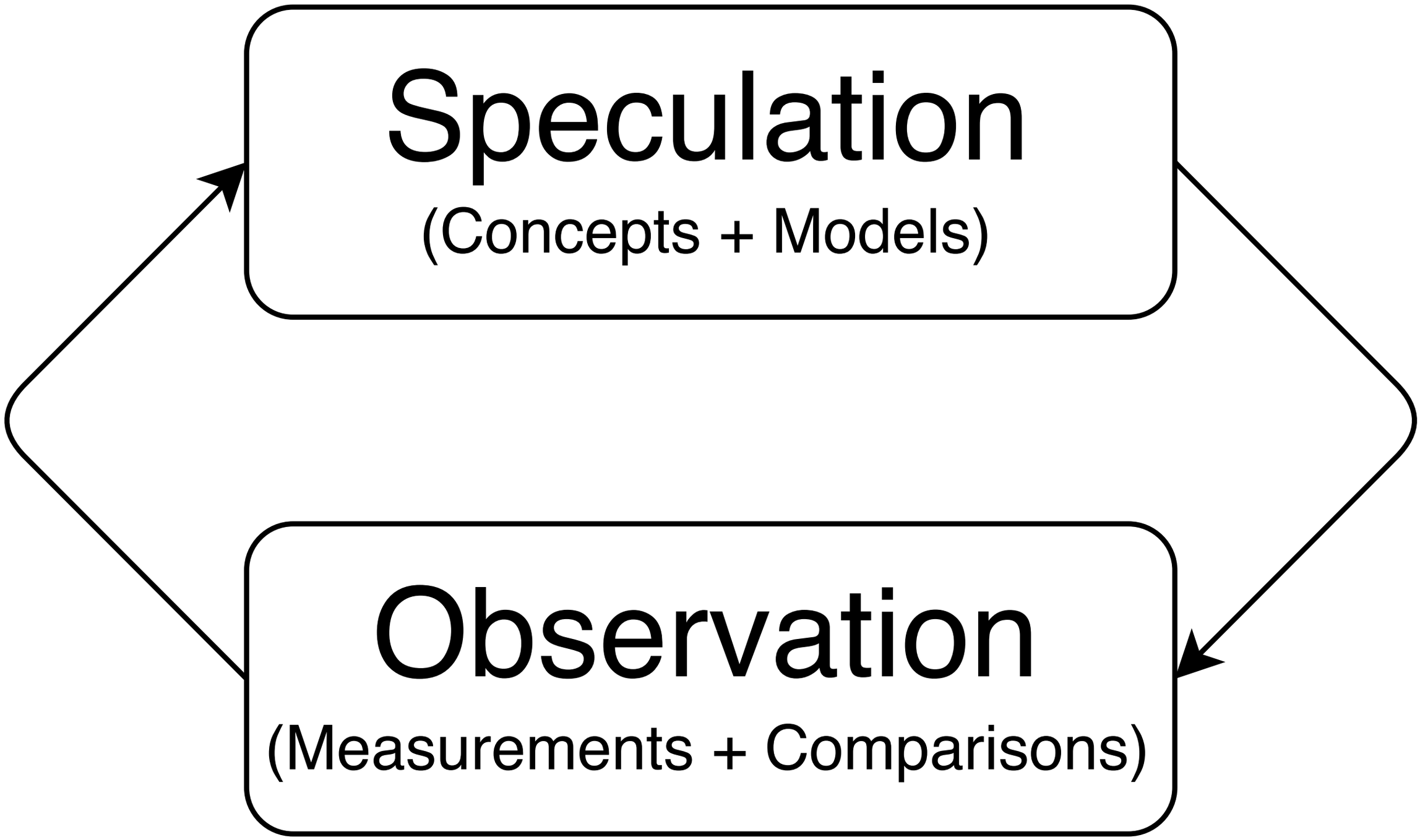
I have already implied the third unity that needs to be established, namely a unity between empirical political studies and a concern

[22] The historians and the elections were: Arthur Schlesinger, Jr., on the election of 1824, Samuel E. Morison and Henry S. Commager on the election of 1860, Allan Nevins on the election of 1884, and William Diamond on the election of

biological rigor is all too painfully aware of the inadequacies of any theory that goes much beyond the immediate data at hand. Yet it seems clear that unless the study of politics generates and is guided by broad, bold, even if highly vulnerable general theories, it is headed for the ultimate disaster of triviality.

Finally, I should like to suggest that empirical political science had better find a place for speculation. It is a grave though easy error for students of politics impressed by the achievements of the natural sciences to imitate all their methods save the most critical one: the use of the imagination. Problems of method and a proper concern for what would be regarded as an acceptable test of an empirical hypothesis have quite properly moved out of the wings to a more central position on the great stage of political science. Yet **surely it is imagination that has generally marked the intelligence of the great scientist, and speculation—often-times foolish speculation, it turned out later—has generally preceded great advances in scientific theory.** It is only fair to add, however, that the speculation of a Galileo, a Kepler, a Newton, or an Einstein, was informed and controlled by a deep understanding of the hard empirical facts as they were known at the time: Kepler's speculations always had to confront the tables of Tycho Brahe.

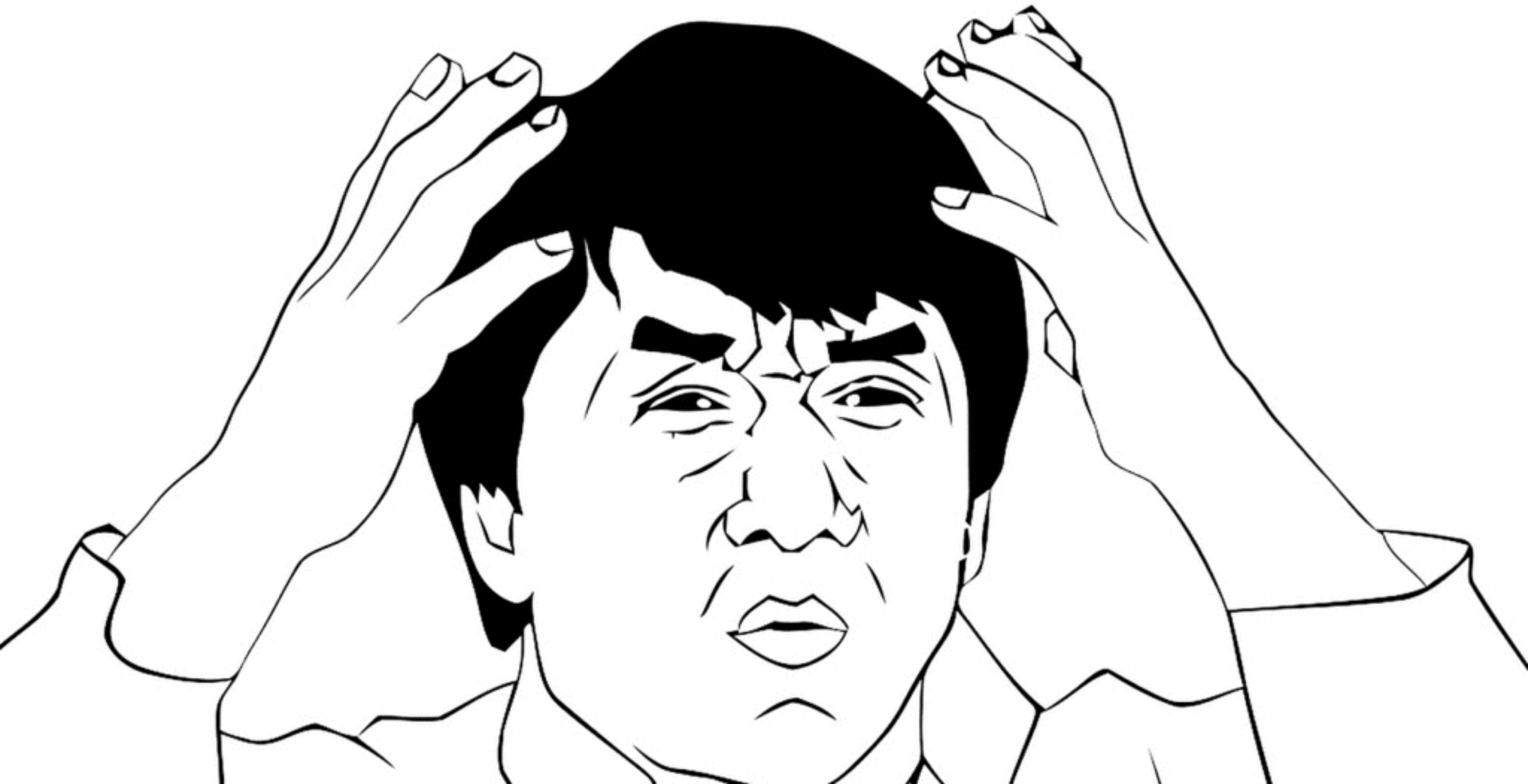
There is every reason to think that unities


Speculation
(Concepts + Models)
Observation
(Measurements + Comparisons)

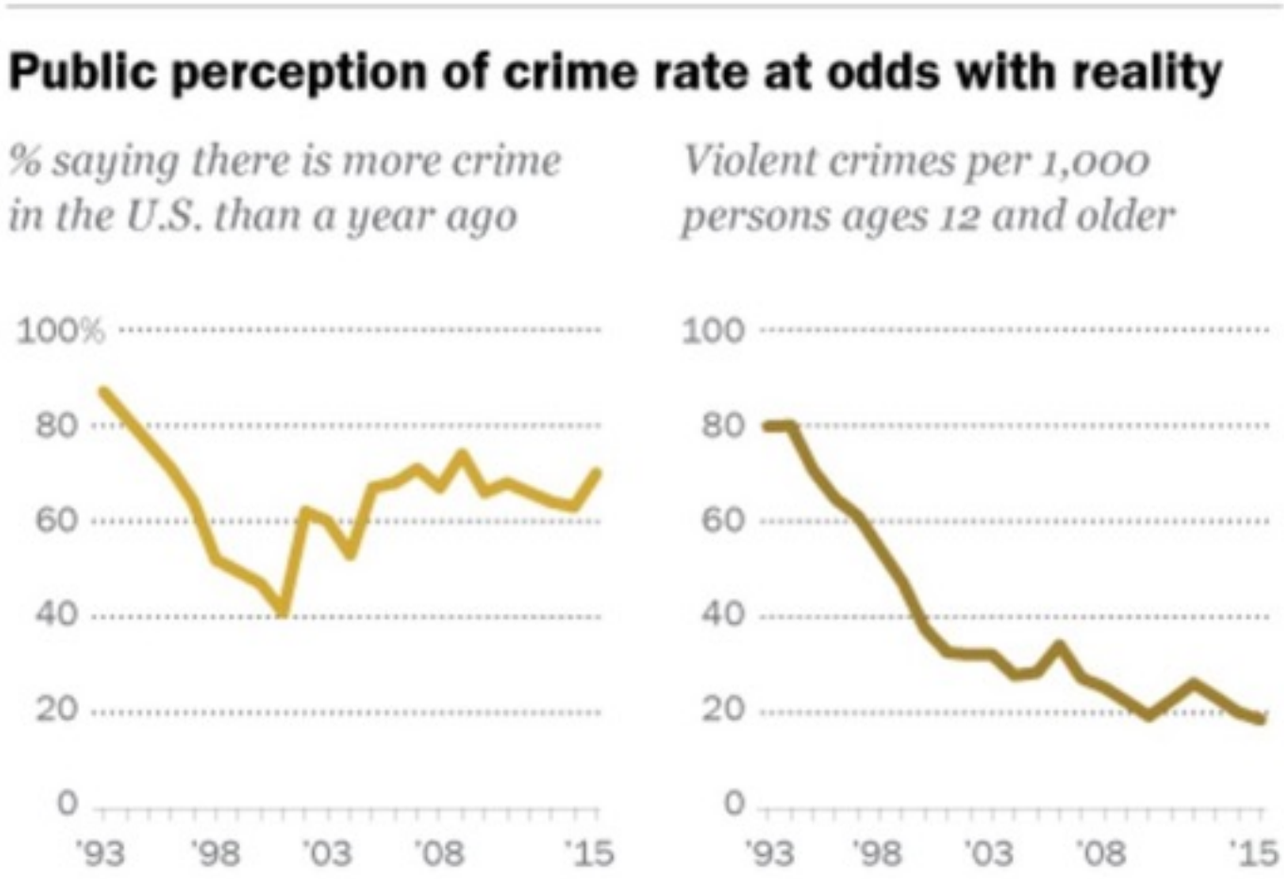
Scientific Method

- concepts
- models
- measurements
- comparisons

How do I build a model?!



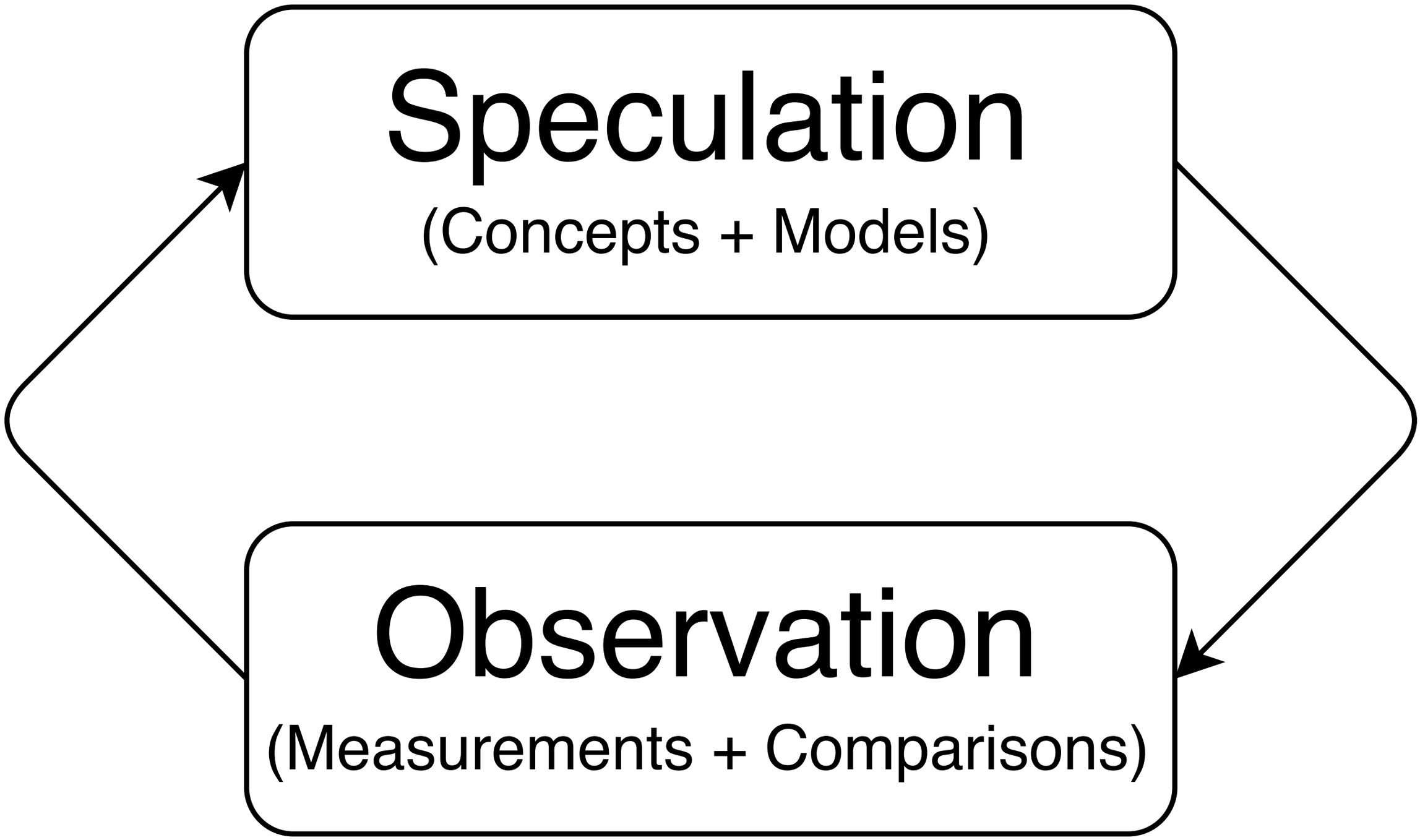
A Small-Group Exercise



A Model of the Model-Building Process

- Step 1: Observe some facts.
- Step 2: Speculate about the causal process that produced these facts.
- Step 3: Deduce other implications.
- Step 4: Observe whether the new implications are true.

Turn the crank of social science.


Speculation
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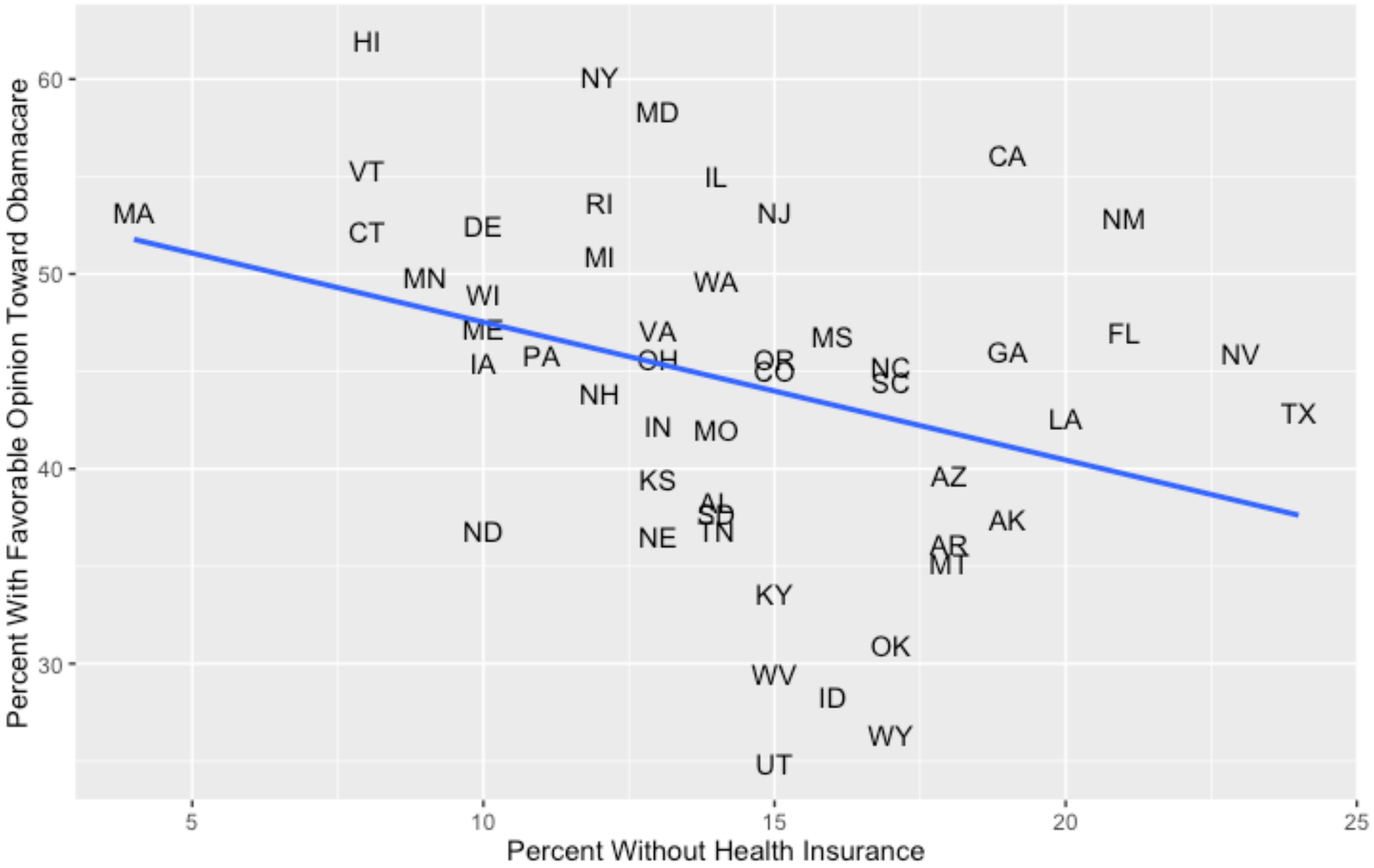
Rules of Thumb

- Rule 1: Think “process.”
- Rule 2: Develop interesting implications.
- Rule 3: Look for generality.
- Rule 4: Realize that model-building is a slow process.
- Rule 5: Talk about your ideas.

Evaluating Models

- Truth
  - critical experiments
- Beauty
- Justice


Percent With Favorable Opinion Toward Obamacare
60
50
40
30
5
10
15
20
25
Percent Without Health Insurance
HI
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NJ
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