POL 226: Approaches to Political Science

Lecture 3 - Philosophy of Science: Induction

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Plan for Today

1. Russell's Chicken
2. The (Presumed) Uniformity of Nature
3. Induction

Imagine You're a Chicken Living a Happy Life

Every Day You'll Get Fed, Right?

Maybe Not

Let's Reflect on the Chicken's Life

1. Why did the chicken expect to get fed every day? Is this a reasonable expectation?
2. Shouldn't the chicken have known one day it would get killed?
3. If induction failed the chicken, why do *we* use it?

On Induction

In groups of three, answer the following (write down the answers):

- According to Russell,[1] what belief (or assumption) about the world do scientists (and humans, more generally) hold? Explain it.
- What is the "business" of science?
- What is the principle of induction and can we achieve certainty? Why or why not?

[1] Russell, Bertrand. 1912 [2001]. "On Induction." In *Philosophy of Science: Contemporary Readings*, eds. Yuri Balashov and Alex Rosenberg, 289-93. London/New York: Routledge.

Uniformity of Nature: True or False?

> *"The belief in the uniformity of nature is the belief that everything that has happened or will happen is an instance of some general law to which there are no exceptions"*

Trick question! Our experience suggests it's true (at least in some cases, like gravity), but we can't be 100% certain.

At the very least, the uniformity of nature is a belief or assumption we rely on every day, whether we are doing science or not.

How does this apply to social science research?

The Principle of Induction

Science uses the principle of induction, which can be explained in two parts:

If ...

- A is found to be associated with B
- A has never been found dissociated from B

then,

1. The greater the number of cases in which we find A and B together, the greater the probability that we will find them together next time
2. A sufficient(ly large) number of cases of this association will make the probability of a new association "nearly a certainty"

What About Scientific Proof?

Can science prove a theory?

Technically speaking, we never prove a theory because we can never be fully certain.

There is no such thing as scientific proof, only scientific evidence that either supports or contradicts our hypotheses.

- The more evidence supporting our hypotheses, the more we can trust the theory/explanation.
- But we might find some evidence that contradicts them.

Where Does This Leave Us?

We need to be aware of the power the scientific approach

- We can learn new things about how the world around us works!

We need to be aware of the limitations the scientific approach

- We need to remain humble about the answers we currently have and trust this collective endeavor

For Next Class

Review, if needed

- Popper, Karl. 1963 [2001]. "Science: Conjectures and Refutations." In *Philosophy of Science: Contemporary Readings*, eds. Yuri Balashov and Alex Rosenberg, 294-301. London/New York: Routledge.

We're done!

Questions or comments?

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