

Knowledge and Reality A: Lecture Seven

1. Deductive/Inductive Reasoning

There are two types of arguments: deductive and inductive. A deductive argument is one such that if the premises *were* true then the conclusion *has* to be true:

If I was dead, I would not be lecturing in front of you right now.

I am lecturing in front of you now.

Conclusion: I'm not dead

But not all arguments are like that. Some are inductive: they are such that the truth of the premises makes it *reasonable* to accept the conclusion, even though it might be false.

Example one: I have seen one million ravens, and they were all black. Conclusion: All ravens are black.

Example two: Everyone who has thus far been within 10 metres of an atomic blast has not survived. Conclusion: I would not survive standing close to an atomic blast.

Example three: We have not found weapons of mass destruction in Iraq. Conclusion: Iraq does not have weapons of mass destruction.

Note that inductive reasoning is only about what it is reasonable to believe. No-one says you should be *certain* that inductive conclusion could be true.

Example: Russell's chicken.

Maybe there are blue crows located in some remote region of the Amazon. Maybe I really *could* hide in a fridge and survive an atomic blast. Maybe there's a 12 megaton nuclear warhead hidden in a pond somewhere in Iraq. But nonetheless these conclusions are *reasonable*.

2. The Problem of Induction

Hume's problem for induction comes in two parts. Is inductive reasoning good reasoning? Why do we think inductive reasoning is good reasoning? We'll be concentrating almost exclusively on the first question.

Hume thinks inductive reasoning is thought to be good reasoning because we assume a suppressed premise: that the world behaves in a reliable, regular manner and will continue to do so. Call that the **uniformity principle**. Including UP into the inductive arguments renders them *deductively valid*.

3. Justifying the Uniformity Principle

Recall, every statement is either *a posteriori* (that is, has to be justified on the basis of empirical evidence) or *a priori* (needn't be justified on the basis of empirical evidence). So UP has to be one or the other.

UP can't be known *a priori*, for it isn't necessary. It isn't *necessary* that the world carry on in a regular fashion. Tomorrow gravity could call it a day, the speed of light to slow to six metres a second and cheese sandwiches could rain from the sky. It's not *impossible*.

So it must be *a posteriori*. Now we get to the real difficulties with induction. We are to base a belief that UP is true on what we have seen empirically i.e. what we have seen of the world thus far.

But that means the argument for UP is:

Everything I have observed of the world until now has been uniform and regular.

Conclusion: All events that take place in the world (throughout all time) are uniform and regular.

Intuitively that's not a bad argument. But that's only because it's a *good inductive argument*. So the original problem was: why do we think inductive reasoning is good reasoning. Hume argues it's because we believe UP. We believe UP on the grounds of inductive reasoning. So we should

only think inductive reasoning is good reasoning *if we already think inductive reasoning is good reasoning*. It's begging the question!

So our inductive reasoning is not justified, according to Hume. He then explains why we think it is, as a matter of 'custom' and 'habit'. Basically, in more contemporary language, we evolved that way. But, like Russell's chicken, we shouldn't be surprised to find our conclusions based on inductive reasoning are radically misguided.

4. Russell's Response

Russell thought that inductive reasoning was good reasoning as the observations made *more probable* the conclusion. If I see a million black ravens that makes it *more probable* that the next raven I see will be black (and that all ravens are black). So *sure* it allows for us being wrong, but it makes it *reasonable* to believe we are right.

But there's a problem here. Just because evidence makes a belief more probable does not, in itself, make it reasonable to believe it. For instance, I don't believe there are witches. If I meet lots of people *claiming* to be witches that *does* make it more probable that there are witches. It is, nonetheless, wholly unreasonable to believe it.

Here's another example. Go back to the lottery that ten million people are entered into. My chance of winning is 0.000001. It is unreasonable to believe I shall win. If I buy *two* tickets my chance of winning is 0.000002. It is now *more* probable. But it's *still* unreasonable to believe I will win.

It not only has to be more probable, but pretty likely for it to be a reasonable belief. How does that work with an inductive argument such as that involving ravens? Well, if you knew that there were one million and one ravens, then having seen one million black ravens *would* make it probable that all ravens were black. But if there were ten trillion ravens, your *sample space* is too small. So it only works if we know we've looked at a *representative sample* of the things involved.

Example: Three coin tosses coming up heads.

But in virtually all cases we won't have a representative sample to hand. For all we know the ravens that there are only a small *non-representative* sample

5. Reichenbach's Pragmatism

Sure, it's unjustified to use inductive arguments but we should do so anyhow. We should do this because it's *pragmatic* to believe things that inductive reasoning tells you to believe. It is in your interests to believe that those things are true. If you *didn't* use inductive reasoning then you would be left believing very little indeed. Deductive reasoning only guarantees a very small stock of beliefs – not really enough to make your way through the world.

The problem here is the point of the enterprise. There are many different types of *should*, many different types of *normative* force. This course is about what you should believe. But when I say 'should' I mean what you are *epistemically obliged* to believe – what you should believe given you are trying to be rational. But pragmatism has different aims in mind. Pragmatism tells you what you should do to have a prosperous life. But if *that* was the point of the questions I was asking I'd be teaching you to believe things like: there is no global warming; cheap goods are not manufactured by immoral means; various beliefs about how to screw the tax system.

All of these make you more *prosperous* and might be *pragmatic* to believe. But so what? Wasn't *truth* what you came here for? As with everything, there is a response that can be given. But as with everything, it'd spoil the fun if I told you all the answers in lectures and you just wrote them down.