Philosophy 101

The Problem of Induction

April 29, 2014

Review of Moore

The Problem of Cartesian Skepticism

1. If I do not know that I am not being radically deceived, then I cannot know that *h* (where *h* is some commonsensically true proposition concerning the physical world)
2. I do not know that I am not being radically deceived
3. ∴ I do not know that *h*

Moore's Proof of the External World

1. Here is a hand
2. Here is another hand
3. ∴ At this moment, two human hands exist
4. ∴ I know an external world (a world outside my mind) exists

Epistemic Closure

- We can extend our knowledge by recognizing, and thereby accepting, things that follow deductively from our knowledge

Closure Principle: Knowledge is "closed under entailment"—
If, while knowing p, S believes q because S knows that p entails q, then S knows q

Closure and Skepticism

The Cartesian Argument

1. If I know that here is a hand (*h*), then I know that I am not being radically deceived (by dreams, an evil demon, etc.)

Closure and Skepticism

The Cartesian Argument

1. If I know that here is a hand (*h*), then I know that I am not being radically deceived (by dreams, an evil demon, etc.)
2. I don't know that I'm not radically deceived

Closure and Skepticism

The Cartesian Argument

1. If I know that here is a hand (h), then I know that I am not being radically deceived (by dreams, an evil demon, etc.)
2. I don't know that I'm not radically deceived
3. $\therefore$ I don't know h

Closure & Skepticism

1. Closure is true
2. $h \rightarrow$ I know I am *not radically deceived* (*NRD*)
3. $\therefore$ If I know h and believe *NRD* on the basis of h then I know *NRD* (by 1, 2)
4. I don't know *NRD*
5. $\therefore$ I don't know that h

Closure & Moore's Argument

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5. $\therefore$ I know *NRD*

Moore's (And Our) Awkward Position

Two Problems

Moore's (And Our) Awkward Position

Two Problems

1. Moore's proof assumes that we know *h* but cannot prove it, and this notion of knowledge without proof runs counter to our epistemic practices
2. If we accept closure, then we must accept either the skeptic's or Moore's conclusion, and both seem counter-intuitive

Induction and Deduction

Deductive Inference

Deductive Inference

- Inference in which the truth of the premises *entails/necessitates* the truth of the conclusion

1. If I know that here is a hand then I know I am not radically deceived
2. I do not know that I am radically deceived
3. ∴ I do not know that here is a hand

Inductive Inference

- Inference in which the truth of the premises *increases the probability* of the truth of the conclusion
  - the greater the probability of the conclusion, given the premises, the *stronger* the inductive argument
- Unlike deductive inference, the conclusion of an inductive inference may be false even when the premises are true

An Example of Induction

1. This swan is white
2. The 1000 swans that I have seen are white
3. ∴ (Probably) All swans are white

An Example of Induction

Induction & Justification

- Inductive inference justifies our beliefs in several ways:
  - beliefs concerning unobserved entities
  - beliefs concerning the future
  - beliefs concerning probability

Induction & Knowledge

- Inductive inference not only *justifies* our beliefs, it often seems to provide *knowledge*
  - Commonsense knowledge about the future, the unobserved, or probability all rely on induction
  - scientific methodology employs induction to generate its conclusions

Induction & Knowledge

- Knowledge that the sun will rise tomorrow is based on the fact that it rose every day previously
- Knowledge that all objects fall to Earth (ignoring air resistance) at a rate of 9.8 meters/s^2 based previously observed behaviour falling objects

Skepticism about Induction

Experience and Expectation

Experience has shown us that, hitherto, the frequent repetition of some uniform succession or coexistence has been a cause of our expecting the same succession or coexistence on the next occasion. (62)

Experience and Expectation

We have therefore to distinguish the fact that past uniformities cause *expectations as to the future, from the question whether there is any reasonable ground for giving weight to such expectations after the question of their validity has been raised. (63)*

Experience and Expectation

- Things that are experienced together tend to be associated with each other
- Association leads to expectation about how things will be in the future, or how things are with respect to unobserved instances
- The fact that experience leads to such expectations doesn't mean that we are *justified* in having these expectations

Experience and Expectation

The experience of uniformity causes particular kinds of psychological associations to form, but does it provide any justification *for our beliefs concerning unobserved instances, future events, or probabilities?*

A Sample Inference

Suppose we have a gumball machine full of gumballs. After several samplings, we notice that all the black gumballs taste like licorice. We then infer that all the black gumballs in the machine must taste like licorice.

A Sample Inference

1. Some black gumballs from the gumball machine have been observed
2. All observed black gumballs from the machine are licorice-flavored
3. ∴ All the black gumballs in the machine are licorice-flavored

A Sample Inference

3. ∴ All the black gumballs in the machine are licorice-flavored

- 3 is the result of an *enumerative induction* — we infer that all the members of a particular class/kind (including members we haven't observed) will be similar to those members of the kind which we have observed

A Good Inference?

Question: Is the truth of (3) guaranteed by the truth of (1) and (2)?

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- *No* — it is possible for (3) to be false even though (1) and (2) are true
  - The inference from (2) to (3) is not *deductive*
- But presumably (3) nevertheless has at least *some* support — it's not a terrible inference

A Good Inference?

1. Some black gumballs from the gumball machine have been observed

- What is the justification for concluding (3) on the basis of (1) and (2)?
  - How do we explain that (1) & (2) seem to support (make probable) the conclusion?

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Uniformity: Nature is uniform in that similar effects always follow from similar causes according to an exceptionless general law

The Uniformity Premise

- What justifies Uniformity?
  - Not *deductively* justified
  - Not *inductively* justified
    - Uniformity is meant to justify induction, so justifying Uniformity via induction would be viciously *circular*

The Skeptical Conclusion

- There is no justification of inductive inference
- Beliefs based on induction are not justified/rationally held
- Since knowledge requires justification, we don't have inductively based knowledge

The Skeptical Conclusion

If the principle [of induction] is unsound, we have no reason to expect the sun to rise tomorrow, to expect bread to be more nourishing than a stone, or to expect that if we throw ourselves off the roof we shall fall…All our conduct is based upon associations which have worked in the past, and which we therefore regard as likely to work in the future; and this likelihood is dependent for its validity upon the inductive principle (69)

Induction and Human Nature

- Inductive inference isn't rationally justified, but we nevertheless do it all the time
- What causes us to reason inductively?
  - Our nature: inductive inference is a *natural* mechanism by which we form beliefs, not a *rational* mechanism