The Problem of Induction

• Hume begins by dividing all our beliefs into two classes: relations of ideas and matters of fact.
  – By ‘relations of ideas’, Hume means all the truths of Geometry, Algebra, or Arithmetic, etc. — all those truths we can discover without having to use our senses.
  * Call those beliefs which can be justified without having to open our eyes or use our senses to get information about the external world a priori.
  * Relations of ideas are a priori.
  * Relations of ideas are also necessary — they cannot even conceivably be false.
  – By ‘matters of fact’, Hume means all the truths about the external world; truths that we must use our senses to discover.
  * Call those beliefs which must be justified by opening our eyes or using our other senses to gather information about the external world a posteriori.
  * Matters of fact are a posteriori.
  * Matter of fact are also contingent — we can conceive of them being false.

• There are a great many matters of fact that we believe which we could not have learned from our senses alone: for instance, you believe that it will not snow tomorrow and that your pizza later tonight will nourish you, though you have not observed either of these things with your own senses.

• How, then, do we reason our way to beliefs like these?
  – Hume: we do so by using relations of cause and effect. For instance,

    P1 This pizza is made of bread, tomato, and cheese.

    P2 Bread, tomato, and cheese will cause nourishment.

    C This pizza will nourish me.

  – Now, Hume asks: how do we come to know propositions like P2 — propositions about relations of cause and effect?
    * Well, there are only two ways that we can come to know something: a priori, by reflecting upon the relations between our ideas, or a posteriori, by inspecting our sense impressions.
    * Hume argues that propositions about cause and effect cannot be known a priori. He gives the following argument:
A priori knowable truths are necessary; we cannot conceive of them being false.

But, we can always conceive of a cause failing to produce its effect.

Relations of cause and effect are not a priori knowable.

* So, Hume concludes that relations of cause and effect must be knowable a posteriori, if at all.
- So, we must utilize some chain of reasoning like the following:

  P1* Bread, tomato sauce, and cheese caused nourishment in the past.
  
  C* Bread, tomato sauce, and cheese will cause nourishment in the future. (P2 from the argument above)

- But what licenses this inference? What makes us think that the past should serve as a guide to the future?
  * Well, if we know that this is a good inference, then we either know it a priori or a posteriori.
  * We can’t know it a priori, since we can conceive of bread, tomato sauce, and cheese not causing nourishment — so it isn’t necessary that bread, tomato sauce, and cheese cause nourishment.
  * So we must know it a posteriori. How could we know that?
- If we’re going to be licensed in going from past causal relationships to future causal relationships, then it must be on a principle of the uniformity of nature, that the future will resemble the past, as so:

  P1** Bread, tomato sauce, and cheese caused nourishment in the past.
  
  P2** The future will resemble the past.
  
  C** Bread, tomato sauce, and cheese will cause nourishment in the future.

- But then, how do we know P2**?
- We can’t know it a priori, since it is conceivable that nature not operate uniformly.
- So, we must know it a posteriori. But then we must be reasoning like so:

  P1*** The future has resembled the past in the past.
  
  C*** The future will resemble the past in the future.
But why should the past uniformity of nature give us any reason to think that nature will continue to operate uniformly in the future. We could conceive of nature operating uniformly up until the present moment and then, all of a sudden ceasing to operate uniformly on March 22, 2012. P1*** will only give us reason to believe C*** if we suppose something extra — that nature operates uniformly:

P1*** The future has resembled the past in the past.

P2*** The future will resemble the past.

C*** The future will resemble the past in the future.

But now we’ve just reasoned in a circle. And a circular reason to believe that this pizza will cause nourishment is not a good reason to believe that this pizza will cause nourishment.

Conclusion: We have no good reason for thinking that this pizza will cause nourishment.

And, of course, we could run through the above argument not just with respect to the pizza you’ll eat later tonight; we could run through it with the proposition that the sun will rise tomorrow, that the earth will continue spinning on its axis, that oxygen will not suffocate us, that unsupported objects near the earth’s surface will continue to fall, and any other proposition about unobserved matters of fact.

We only know anything about unobserved matters of fact by connecting them to observed matters of fact via chains of cause-and-effect. But, these chains of cause and effect will themselves be unobserved. So, we can only know something about them from our past experience with similar causal relations. But we can only know that the unobserved causal relations will be similar to the observed causal relations if we suppose that the future resembles the past. But we can only know this on the basis of nature’s past uniformity. But nature’s past uniformity only gives us reason to think that nature will operate uniformly in the future if we suppose that the future will resemble the past — which is precisely what we’re trying to establish. So, there isn’t any good, non-circular, reason to think that observed regularities will continue into the future.