Hume on Causation and Induction (1748)

1. Connections between ideas: There are three ways that the mind naturally perceives a connection between ideas. (*Inquiry*, section 3) These are:

- **Resemblance** (e.g., the idea of a photograph of a person naturally leads us to consider the person IN the photo)

- **Contiguity** (e.g., the idea of a single apartment in an apartment building naturally leads us to picture the other apartments conjoined to it)

- **Cause and Effect** (e.g., the idea of a wound naturally leads us to consider the pain that would result from that wound)

2. Two categories of knowledge: The things that we claim to KNOW via some reasoning process may be divided into two categories. (*section 4.1*) These are:

- **Relations of Ideas:** These are the sorts of things that can be known merely by considering ideas in the mind and discovering the relations between them. They do not require any experience of the world in order to know them. For instance, “$3 \times 5 = 30/2$” or “all bachelors are unmarried” merely express relations between the concepts involved in those statements. These relations can be known with CERTAINTY; i.e., there is NO WAY that these statements could be false. To deny them would result in a contradiction.

- **Matters of Fact:** These are the sorts of things that can only be known by experience. They cannot be known with certainty; i.e., denying these statements would NOT result in a contradiction. For instance, “The sun will rise tomorrow” is a matter of fact. Note that “The sun will NOT rise tomorrow” is not an incoherent or internally inconsistent statement.

Note: MOST of the things that we claim to know are matters of fact.

3. How do we know matters of fact?: Relations of ideas can be known with certainty merely by understanding both the concepts involved, and how ideas can consistently be related to one another. How are matters of fact known?

   **Step 1: Experience:** First, matters of fact must be known by experience. They cannot be known merely by reasoning within the mind.

   **Step 2: Inference:** Next, matters of fact are “known” whenever some PRESENT fact leads us to infer some FURTHER fact (because we assume that there is some connection between these two things).
Step 3: Cause & Effect: Finally, the relation that is assumed to connect these two things is that of cause and effect. For instance, if you hear a voice speaking in the dark, you reason to the fact that “There is a person in this room” because you assume that the person and the voice are connected as a cause to an effect.

4. On cause and effect: If matters of fact are known because of an assumed relation of cause and effect between two things, then how is this relation known? In other words, how do we know when something is the cause of something else?

Causation is known only by experience: Cause and effect cannot be known by reason alone. The effects cannot be seen as contained within their causes. We only learn what the effects of certain things are by experience. Imagine someone who had never had any experiences before. There would be no way for such a person to know prior to experience that water would suffocate him, or that fire would burn him.

Likewise, if we never saw a stone before, or knew that things fell to the ground when released, what would we predict if we released a stone for the first time? We might think it just as probable for the object to continue hanging there, as it would be to fly off in any direction.

Or, imagine that we had never seen moving objects before, or billiard balls. If one ball was rolling toward another, we might just as easily expect the first ball to come to a halt as it struck the second as we would expect it to bounce in the other direction, or make the second ball start moving, or itself fly off in any direction.

In other words, prior to experience, we have no reason to expect that an object will behave a certain way or produce a certain effect.

Causation is known by repeated experience: So far, Hume has argued that matters of fact are grounded in our inference of causation, and that our inference of causation is grounded in experience. But, what grounds our inferences from experience?

Seeing a stone fall once, or a billiard ball strike another once does not seem to be enough to justify our inference that causation has occurred. There must be something more to our inference of causation then. What is it?

The answer is that we experience a “constant conjunction” of things. When I am hungry and I have some bread, I do not hesitate to eat it. Why? Because every time that I have seen something that looked and smelled like bread in the
past, it nourished me when I ate it. Therefore, bread and nourishment have always been “constantly conjoined” together in my past experiences. So, when I see bread, I expect that it will AGAIN be conjoined with nourishment.

But, note the assumption that this inference relies on. We start from the fact, “Bread has always nourished me in the past” and conclude that “This bread will nourish me now.” But, in order to go from the former to the latter, we must assume the following:

• **The assumption:** Things that have been joined together in the past will **CONTINUE** to be joined together in the future.
  Or, put simply: The future will conform to the past.

But, Hume says, this assumption is not intuitive. How, then, is it justified? It is not known prior to experience, with certainty—for, its negation (“Things that have been joined together in the past will NOT continue to be joined together in the future”) does not result in a contradiction. Bread that makes one hungry rather than full, or the sun failing to rise tomorrow, are perfectly conceivable. Therefore, this assumption must be known by experience. Every time, in the past, that we tried to predict what the future would be like, we discovered that when those events arrived in the present, things **DID** conform to the past. So, this assumption is known via constant conjunction.

But, notice now that our chain of justification is circular:

• Matters of fact are justified by matters of cause and effect.
• Matters of cause and effect are justified by (1) Our experience (of constant conjunction), and (2) The assumption that the future will conform to the past.
• The assumption that the future will conform to the past is justified by (1) Our experience (of constant conjunction), and (2) The assumption that the future will conform to the past.
• And so on, to infinity.

So, how is this assumption justified? We seem to assume that, if a thing that looks a certain way (e.g., bread) has always produced a certain effect (e.g., nourishment), then it will ALWAYS do so. But, why? There is no reason for us to think that such a connection is a necessary one. All we ever observe are single instances. With bread, for instance, I never observe the necessary connection between bread and nourishment, per se. All I ever observe is the eating of bread, and my own nourishment. But, no matter how many times I observe this, it is exactly the same. The 1000th time, I still merely observe the eating and the nourishment. The necessary connection—the causation—between the two is never observed.
There is, ultimately, no explanation for this assumption except custom, or habit. Due to the experience of constant conjunction of two things, our minds are naturally led to the conclusion that there must be some connection between those two things, with no reason that justifies this.

My alarm clock goes off at 6am every day. Also, at 6am every day, the local coffee shopkeeper unlocks his front door. There is a “constant conjunction” between these two events. But, there is no causation here. My alarm clock does not CAUSE the coffee shop to open. The connection is only an “accidental regularity.” But, notice, constant conjunction is the only thing that is ever observed with ANY two things. So, why do we infer causation for some things but not others?

**Induction:** This worry is a problem for scientists, who conduct all of their investigations based on induction. Induction is the inference that, through repeated observation, future observations will conform to past ones. For instance, if I have observed 1000 black ravens, I can hypothesize that ALL ravens are black. Likewise, if I observe that the sun rises in the East 1000 times in a row, I can hypothesize that it will ALWAYS rise in the East. This is how all science is conducted. But, if the assumption that the future will conform to the past is unjustified, then all of science is ultimately unjustified. According to Hume, whether I’ve observed the sun rising in the East one time, one thousand times, or one MILLION times, there is no more reason to believe that it will rise in the East NEXT time. This is total skepticism about all scientific inquiry.

How do we answer Hume?