

# Hume and the classical problem of induction

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1	Deduction and induction . . . . .	1
2	Skepticism about induction . . . . .	2
2.1	The problem . . . . .	2
2.2	Two kinds of knowledge . . . . .	2
2.3	“Causes and effects are discoverable, not by reason but by experience” . . . . .	3
2.4	Is inductive inference justified by experience? . . . . .	3
2.5	The reliance of induction on the uniformity of nature . . . . .	4
2.6	How can belief in the uniformity of nature be justified? . . . . .	5
3	Responses to Hume’s problem . . . . .	5
3.1	A response based on probability . . . . .	5
3.2	Reliabilism about justification . . . . .	5
3.3	Replacing induction with deduction . . . . .	5

## 1 Deduction and induction

Before beginning our discussion of Hume’s skeptical arguments about induction, it will be good to distinguish inductive arguments from deductive arguments. Below are two examples of arguments which seem in some sense to be good arguments, but do not seem to be deductively valid:

Every day so far, the sun has risen.	There is a correlation between smoking and lung cancer.
<hr/> The sun will rise tomorrow.	<hr/> Smoking causes lung cancer.

Why do these arguments seem not to be deductively valid?

A difference between the argument on the left and the one on the right: enumerative induction vs. inference to the best explanation. In a broad sense of ‘induction’, but are inductive arguments: both can provide good reasons for belief without being deductively valid. We will be focusing on cases of enumerative induction.

## 2 Skepticism about induction

### 2.1 The problem

The problem of induction is the problem of explaining the rationality of believing the conclusions of arguments like the above on the basis of belief in their premises. Put another way: supposing that we had good reason for believing that the premises in the above arguments are true, why would this (at least sometimes) provide us with good reason for also believing the conclusions?

Hume sets up the problem like this:

“All reasonings concerning matter of fact seem to be founded on the relation of *cause and effect*. By means of that relation alone can we go beyond the evidence of our memory and senses. If you were to ask a man, why he believes any matter of fact, which is absent; for instance that his friend is in the country ... he would give you a reason; and this reason would be some other fact; as a letter received from him, or the knowledge of his former resolutions and promises. ... All our reasonings concerning fact are of the same nature. And here it is constantly supposed that there is a connection between the present fact and that which is inferred from it. ...

If we would satisfy ourselves, therefore, concerning the nature of that evidence, which assures us of matters of fact, we must inquire how we arrive at the knowledge of cause and effect.”

Though he begins just by talking about cause and effect, it is clear that he is concerned with the general question of how observation of one state of affairs (such as the receiving of a letter from a friend, saying that the friend is in the country) could provide evidence for belief in another state of affairs (such as that the friend is in the country).

### 2.2 Two kinds of knowledge

Hume is asking how knowledge of this sort could be possible. In answering this question, he brings to bear a distinction between what he takes to be the only two legitimate sources of knowledge:

“All the objects of human reason or inquiry may naturally be divided into two kinds, to wit, *relations of ideas*, and *matters of fact*. Of the first kind are the sciences of geometry, algebra, and arithmetic; and in short, every affirmation which is either intuitively or demonstratively certain. ... Propositions of this kind are discoverable by the mere operation of thought, without dependence on what is anywhere existent in the universe. ...

Matters of fact, which are the second objects of human reason, are not ascertained in the same manner; ... The contrary of every matter of fact is still possible; because it can never imply a contradiction, and is conceived by the

mind with the same facility and distinctness, as if ever so conformable to reality. *That the sun will not rise tomorrow* is no less intelligible a proposition, and implies no more contradiction than the affirmation, *that it will rise*. . . .

It may, therefore, be a subject worthy of curiosity, to inquire what is the nature of that evidence which assures us of any real existence and matter of fact, beyond the present testimony of our senses, or the records of our memory.”

The nature of this distinction; the senses as one route to knowledge of matters of facts; the remaining question of how we come to know about matters of fact which we do not directly observe. Two possibilities: (i) we know by reason alone of some (presumably causal) connection between the distinct states of affairs, and (ii) we know of such a connection by experience.

Hume argues that neither (i) or (ii) can give an adequate explanation of how we are justified in this sort of knowledge.

### 2.3 “Causes and effects are discoverable, not by reason but by experience”

First, he argues that we do not know of the connections between distinct matters of fact by reason alone:

“I shall venture to affirm, as a general proposition, which admits of no exception, that the knowledge of this relation is not, in any instance, attained by reasonings *a priori*; but arises entirely from experience, when we find that any particular objects are constantly conjoined with each other. Let an object be presented to a man of ever so strong natural reason and abilities; if that object be entirely new to him, he will not be able, by the most accurate examination of its sensible qualities, to discover any of its causes or effects.”

He gives a second, related argument using a principle about ‘distinct existences’. The idea is that, given that there are no necessary connections between fully distinct objects (events, states of affairs), there is no way for reason alone to discern any connection between them. This is why, in the passage you read, Hume argues

“In a word, then, every effect is a distinct event from its cause. It could not, therefore, be discovered in the cause . . .”

### 2.4 *Is inductive inference justified by experience?*

At the end of ‘Part I’, Hume takes himself to have established that we can not know of the causal connections between distinct states of affairs by reasoning alone. So option (i) above for justifying our beliefs about matters of fact not directly observed has been closed off. In Part II, he begins the investigation of the prospects of option (ii): that these beliefs are justified by experience.

He suggests, however, that there is a problem with this sort of justification as well:

“As to past *experience*, it can be allowed to give *direct* and *certain* information of those precise objects only, and that precise period of time, which fell under its cognizance: but why this experience should be extended to future times, and to other objects . . . this is the main question on which I would insist. The bread, which I formerly eat, nourished me; that is, a body of such sensible qualities was, at that time, endued with such secret powers: but does it follow, that other bread must also nourish me at another time, and that like sensible qualities must always be attended with like secret powers? The consequence seems no wise necessary. At least, it must be acknowledged that there is here a consequence drawn by the mind . . . which wants to be explained. These two propositions are far from being the same, *I have found that such an object has always been attended with such an effect*, and *I foresee, that other objects, which are, in appearance, similar, will be attended with similar effects*. . . if you insist that the inference is made by a chain of reasoning, I desire you to produce that reasoning.”

Inductive reasoning cannot be justified directly by experience, since experience only directly gives us knowledge of sensed states of affairs, and inductive reasoning takes us beyond sensed to un-sensed states of affairs. So maybe the connection between the two relevant classes of states of affairs is known by experience to obtain. But this thought falls prey to the objection in the text: all experience gives us knowledge of is the past conjunction of two kinds of states of affairs (e.g., its being morning and the sun’s coming up). But the proposition that in the past, morning has always been accompanied by the sun coming up is different from the proposition that, in the future, morning will be accompanied by the sun coming up. Even if experience gives us knowledge of the former proposition, it does not give us knowledge of the latter. So Hume’s challenge remains unanswered.

### 2.5 The reliance of induction on the uniformity of nature

It is natural to try to respond to this challenge by citing the uniformity of nature: we are justified in moving from propositions about past correlations to propositions about future correlations by our knowledge that nature is, in general uniform: the past is, in relevant respects, like the future. This could fill the gap in the above inductive arguments; adding this principle of the uniformity of nature in as a second premise, we get something like the following:

1. Every day in the past, the sun has risen.
  2. Nature is uniform. (The future will be like the past.)
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- C. Tomorrow, the sun will rise.

Details aside, this looks like a deductively valid argument (unlike our original inductive arguments). So maybe this is an answer to Hume’s problem: we are justified in making inductive inferences because we are justified in believing in the uniformity of nature.

## 2.6 *How can belief in the uniformity of nature be justified?*

Though this sounds plausible and promising, it runs into an immediate problem: how is our belief in the uniformity of nature justified? How, that is, do we know that the future will be like the past? Here it seems that we face the same choices as above: either we know it by reason, or we know it by experience.

It seems that we cannot know it by reason alone, since there is nothing contradictory in the supposition that the future will not be like the past.

We cannot know it directly by experience, since we cannot observe the future.

A natural thought is that we can know of the uniformity of nature by experience, but without observing the future, by observing that, in the past, nature has always been uniform. This is true, but no help in our predicament. Hume puts the point like this:

“We have said that all arguments concerning existence are founded on the relation of cause and effect; that our knowledge of that relation is derived entirely from experience; and that all our experimental conclusions proceed upon the supposition that the future will be conformable to the past. To endeavor, therefore, the proof of this last supposition by probable arguments, or arguments regarding existence, must be evidently going in a circle, and taking that for granted, which is the very point in question.”

Hume’s idea here is this. We want to justify our belief that the future will be like the past in terms of our experience that (as we might put it) in the past, the future has always been like the past. But this is just another case in which we are trying to explain knowledge of some correlation’s now holding in terms of knowledge of that correlation’s holding in the past. But how do we move from the latter bit of knowledge to the former? How, that is, do we know that *if* in the past it has always been true that the future was like the past, *then* now it is true that the future will be like the past? Presumably, by our knowledge of the uniformity of nature. But that was the very bit of alleged knowledge that we were trying to justify.

Moral of the story: we would be justified in our inductive inferences if we were justified in believing in the uniformity of nature; but we cannot be justified in the latter, since the uniformity of nature is knowable neither by reason nor by experience.

## 3 Responses to Hume’s problem

### 3.1 *A response based on probability*

### 3.2 *Reliabilism about justification*

### 3.3 *Replacing induction with deduction*