

The Problem of Induction

Although James and Clifford disagree about the reasonableness of belief in a special class of propositions (when they constitute a genuine choice for us), they agree that in the majority of cases empirical investigation and the scientific pursuit of evidence is at least *a*, if not *the* proper way to proceed in forming beliefs. It appears that at least on most matters and especially in cases where we might be prone to systematic distortion, we'd do well to conscientiously gather empirical evidence before deciding what to believe. They both maintain, in fact, that scientific inquiry is to be contrasted with belief based in faith. Is this contrast warranted?

The problem of induction challenges the alleged contrast. The problem has two parts.

i) The descriptive problem: How do we form opinions about unobserved matters of fact?

ii) The normative problem: Is our way of forming opinions about unobserved matters of fact legitimate, justified? I.e., is our "reasoning" about unobserved matters of fact valid?

Let's begin with (i). We're focusing on opinions about things we haven't observed, i.e., things we aren't now perceiving and haven't perceived in the past. How do we form such opinions? In some cases the matter is trivial: I believe that all squares have four sides, that in every case of adding two apples and two oranges I will have four fruits, that all tables are furniture. And in each case I know these things without examining all squares, apples, tables. According to Hume, in these cases our knowledge concerns "relations of ideas".

S expresses a *relation of ideas* if and only if its denial is strictly impossible (inconceivable, or self-contradictory).

Relations of ideas are to be distinguished from matters of fact:

S expresses a *matter of fact* if and only if both it and its denial are possible (conceivable, non-self-contradictory).

The descriptive problem is how we form opinions concerning *unobserved matters of fact*. Note, in particular, this concerns all of our opinions concerning the future. We don't perceive the future; neither do we remember it. What, then, is the source of our opinions about it? Such opinions are crucial: imagine not having any opinions about the future. Could you undertake any course of action? Hume argues that:

Opinions about unobserved matters of fact are derived from experience somehow.

This seems to follow from a consideration of examples: how do we know how something never before examined will behave or what unobserved properties it might have? If the hypothesis we're considering is a matter of fact, any conjunction of properties is possible. So we must consult experience. For example,

In my experience so far, chalk has always easily broken.
So, in general, chalk is easily broken.

This appears to be a general pattern in our reasoning:

(Data) In my/our experience, all Fs are G.

(Theory) In general, all Fs are G (or at least the next F I examine will be G).

This sort of reasoning is called *induction*, or *inductive inference*. Hume's answer, then, to the descriptive problem is:

Opinions about unobserved matters of fact are derived from experience by induction.

Let us now turn to the second problem (ii) the normative problem. Is this form of reasoning justified? Notice that the inference from (Data) to (Theory) is not deductively valid: it is possible for the premise to be true and the conclusion false. So should we conclude from this alone that these inferences aren't valid? Is it possible to supply a suppressed premise?

Consider:

(UN) If in all my/our experience thus far all Fs are G, then the regularity that all Fs are G occurs generally (now and into the future).

This is the principle usually called the "Uniformity of Nature" principle. But note that it makes the very strong claim that the patterns *that have appeared thus far in my experience* hold generally in nature. Since (Data)+(UN) entail (Theory), whether induction is justified now seems to rest on whether (UN) is defensible. But Hume argues that there is no non-circular defense of (UN):

- i) (UN) expresses a matter of fact. (It's denial is conceivable.)
- ii) (UN) concerns unobserved matters of fact. (It is, in part, about the future.)
- iii) All knowledge of unobserved matters of fact would have to be derived from experience by induction. (Since induction is our only source of such beliefs/opinions.)
- iv) But (UN) is a premise in any inductive argument; and an argument for (UN) that uses (UN) as a premise would be circular.
- v) So there is no non-circular argument for (UN).

Let's try such an argument just to be sure:

D) In my/our experience, regularities that have held in my experience have been found to occur generally (or at least in the next case).

T) So in general, if a regularity holds in my experience, it will hold generally.

The inference from (D)-(T) is not valid without (UN) as an additional premise, which will make the reasoning circular. An inductive defense of induction won't work. This suggests that scientific inquiry, i.e., inquiry that attempts to draw conclusions about what is unobserved from what is observed, rests on an assumption that cannot itself be proven, but must be taken as an article of "faith". After all, any evidence we might marshal to support (UN) will be derived from past and present experience, and we cannot use such evidence to support a claim that goes beyond past and present experience without relying on the principle itself.

Questions:

i Does this show that we have no more reason to trust scientific inquiry than any other form of inquiry (crystal gazing, guessing, etc.) in our efforts to gain knowledge of nature?

i Is there any difference in kind between our confidence in science and religious faith?

Some responses to Hume's argument: (Do you find them convincing?)

i Science is tremendously successful in providing accurate predictions; more successful than any alternative method. This shows (UN) to be acceptable.

i (UN) is a principle of reason; following it constitutes what it is to reason correctly about matters of fact.

i Science relies on better evidence than any alternative methods. This distinguishes (UN) from other principles?the regularities found are more uniform, more systematically tested, etc.