

Chapter 35

Inductive Reasoning is Not Justificatory Reasoning (II)

1. What's at stake

Suppose that you expect or predict that the next time you bring your bare hand close to a lit match, your bare hand will be warmed. If you have formed this expectation or arrived at this prediction inductively, you have done so by noting that events of the one sort, events, that is, of bringing your bare skin close to a lit match, have in the past been followed by events of the other sort, events, that is, of having one's skin warmed. This correlation or pairing has held in the past, you think; you expect or predict that it will hold also in the future.

The argument of the last chapter implies that your long experience of lit matches and warm hands gives you no reason at all to expect that the next time you bring a lit match close to your bare hand your hand will be warmed. It purports to show that the strong inductive argument you possess to the conclusion that your hand will be warmed in no way—in no way at all—justifies your expectation that it will.

If you understand what it means to say that inductive reasoning is not justificatory reasoning and if you are at least beginning to understand the argument in favour of that claim, you must be feeling dizzy or sick to your stomach right now. If the thesis that inductive reasoning is not justificatory reasoning is true, then, as you are beginning to sense, your epistemic connections to the world are very much different from how they have previously appeared to you to be. Your grasp on the world is not tight; or, rather, as you see, you have absolutely no idea how tight your grasp on it is. The queasy feeling in your stomach arises from this realization. If the thesis is true, a person who thinks that the next time he brings a lit match to his bare hand, his hand will be cooled or will disappear, is not thinking irrationally.

He is making no mistake in reasoning. Your thought that your hand will be warmed is no less, from the point of view of reason, a blind guess than is his crazy thought that his hand will be cooled. Your confidence in your expectation, and his confidence in his, are equally reasonable—both are totally groundless.

Let us recall the argument as we have developed it so far. To say that inductive reasoning *is* justificatory reasoning is to say that the conclusions of strong inductive arguments are typically true, so long as all the premises are true, and that we have good reason for believing that they are. If inductive reasoning is justificatory reasoning, then, the fact that a prediction follows strongly from a set of premises none of which is false is an excellent reason for accepting that prediction as true. One is reasonable to conform one's expectation to it, unreasonable to form an expectation to the contrary. What, then, is our good reason for thinking that the conclusions of strong inductive arguments with true premises are typically true? Here's what seems at first view a plausible answer to this question: Our good reason for thinking that predictions generated by strong inductive arguments all the premises of which are true is that so far predictions generated by strong inductive arguments all the premises of which are true have typically been borne out by the course of events. —But wait!, begins the argument that inductive reasoning is not justificatory reasoning. —An argument that begs the question in favour of its conclusion actually gives one no reason at all for accepting that

conclusion as true. Now notice this (the argument continues): the supposedly plausible argument to the effect that as induction has typically generated true predictions in the past, so it will continue into the future to generate true predictions is an inductive argument in favour of induction's reliability. As such, it uses the method of reasoning whose justificatory status is in question to back up the claim that that method of reasoning is justificatory. To use a method of reasoning in defence of the soundness of that method, though, is to beg the question in favour of that method's soundness. Since an argument that begs the question in favour of its conclusion gives one no reason at all to think that that conclusion is true, the plausible argument given in defence of the claim that inductive reasoning is justificatory reasoning is in fact no reason at all to think that inductive reasoning is justificatory reasoning. Indeed, there can be no reason to think that inductive reasoning is justificatory reasoning, and so inductive reasoning is not justificatory reasoning.

(There is a large hole in the above argument. What is it? Hint: not all arguments are inductive arguments. We will fill in this hole later in the chapter.)

Before examining this argument, let us pause first to make sure we understand what is at stake in the question whether inductive reasoning is justificatory reasoning. Let us then attempt to dissolve a few common misunderstandings. A piece of reasoning or an argument is justificatory when it confers justification on a belief. That is, a piece of reasoning or an argument is justificatory when it shows the belief to be true or most likely true. When a belief is backed up by a justificatory line of reasoning or argument, the person who holds it is well justified in holding that that belief is true. What is at stake in the question whether inductive reasoning is justificatory reasoning, then, is whether we are well justified in believing true a proposition in virtue of its fitting well with our beliefs about our experience of things to date. If we are not, then we have no idea whether what we think is evidence in favour of some prediction really is evidence in favour of it, and no idea whether what we think is evidence against another prediction really is evidence against it. If inductive reasoning is not justificatory reasoning, then all our beliefs about the future are simply guesses or conjectures. We have no real epistemic grasp on what will come.

2. Misunderstandings

The results described above are very difficult to hold steadily in one's mind. Even once one understands the claim that inductive reasoning is not justificatory reasoning and appreciates what is at stake, still the claim itself will go in and out of focus. The claim is so very radical, and its implications are so contrary to how most of us tend to think, that often people interpret it wrongly. Let us try to disabuse ourselves of some of these misunderstandings.

1) The first and most common misunderstanding is to think that the point of all this is simply to remind us that we can never be sure how the future will unfold no matter how much information we have. Many factors contribute to what will come next, so many that it is impossible to discover them all. And so we just cannot be sure that what we think will happen will happen. If we need to be sure of something before we can claim to know it, we must accept that the course of the future is something we cannot know. Yes, I am quite confident that the next time I bring my hand close to a lit match, my hand will be warmed. But I can't be entirely confident that it will be. After all, a small gust of wind could blow the heat away just as my hand comes near the match—or, perhaps, unknown to me, I've suffered

nerve damage in my hand, making me insensitive to heat. Practically speaking, then, I should never have total confidence in my expectations, for anything that could happen might happen. And that's what all this confusing talk about inductive reasoning not being justificatory reasoning comes down to in the end. We just can't know for sure what the future will bring.

This is a serious misunderstanding of the thesis that inductive reasoning is not justificatory reasoning. That thesis is not merely that we cannot ever be sure that the future will turn out as we expect; it is, rather, that we cannot have any reason at all to think that it will turn out as we expect it to. It is true and important that even on the very best and most complete evidence we can have, still we cannot be entirely sure that things will go as we expect. But that truth nonetheless allows that we can have good (though not conclusive) reason for thinking that things will go one way rather than another, and that we can have good (though not conclusive) reason for thinking things won't go some wild way. No, the thesis we are pursuing is not that we sometimes can have *some* reason for thinking things will go one way, though never conclusive reason; it is, indeed, the thesis that we can have *no* reason *ever*. The thesis must be understood literally: believing truly that events of two sorts have so far been strongly correlated gives a person *absolutely no reason at all* to expect that the next time an event of the one sort occurs, an event of the other sort will occur.

To avoid this misunderstanding, remember: Even were nothing unexpected ever to happen, even were, that is, all our predictions to be borne out, still, according to the argument we are considering, our confidence in our expectations would be entirely without ground.

2) The second misunderstanding is closely related to the first, if not in fact a version of it. The whole problem would be resolved, goes this misunderstanding, if only we would remember to insert "likely" or "probably" before the conclusions of our strong inductive arguments. That my bare hand has been warmed countless times by lit matches makes it likely or probable that the next time I bring my bare hand close to a match it will be warmed—*only* likely or probable, even if very likely or very probable, not definite or certain. The argument that inductive reasoning is not justificatory reasoning, though, goes through just the same even if we carefully qualify as likely or probable the predictions at which we arrive. That inductive reasoning is not justificatory reasoning implies that we can have no reason, no reason at all, for assigning any degree of probability, vague or precise, to the occurrence of an event of some sort.

3) Whatever we expect the future to bring, we entirely lack justification in expecting that that's what the future will bring. This contention, according to the third common misunderstanding, implies that whatever we expect, we are *unjustified* in expecting it. And, if we are unjustified in expecting something, it is wrong of us to expect it; thus, we ought not expect it. So we are to have no expectations, or perhaps we are to find some other way to generate predictions or expectations. (Perhaps we are to read tea-leaves or consult astrologers or just to expect that whatever we want to happen will happen.) The thesis that inductive reasoning is not justificatory reasoning, then, on this misunderstanding, counsels us not to expect anything or at least not to fashion expectations inductively.

One might try on the basis of the result that we are not to expect anything to reduce to absurdity the thesis that inductive reasoning is not justificatory reasoning. We are counselled not to expect anything, but it is impossible to be without expectations. Since we cannot be without expectations, any thesis that implies we should divest ourselves of expectations must

be false. Thus it is false that inductive reasoning is not justificatory reasoning. (We can be confident that inductive reasoning *is* justificatory reasoning, given this reduction, even though we might not be able to explain how it is. To explain how it is, we need to be able to say where the argument that it isn't goes wrong, and that is something we don't, or don't yet, know how to do.)

This line of thought presupposes that to lack justification for a belief or expectation is to be unjustified in holding it, where that means that one is going against reason in holding it. This presupposition is false—or, at least, nothing either in the thesis that inductive reasoning is not justificatory reasoning or in the argument for that thesis requires us to make it. That we lack any justification for expecting that our hand will be warmed the next time we bring it close to a lit match does not imply that we should not expect that it will be warmed. That we lack any justification for being as confident as we are in our expectation does not imply that we ought not be so confident.

We need to draw a distinction between that which has no reason behind it and that which is against reason. We believe something against reason when we believe it in violation of our standards of belief. We believe against reason that penguins can fly when we believe it despite having evidence that penguins cannot fly. When we believe something against reason, that belief is inconsistent with other beliefs we have or, at least, with the implications of other beliefs we have. We believe something merely without reason when it doesn't conflict with our beliefs though none of our beliefs actually supports it. Given this distinction, we can say that while we lack justification for expecting that our hand will be warmed, we are not being unreasonable in expecting it in such a way that we should give up our expectation.

We expect what we do and expect it with the confidence we have, then, not (necessarily) in violation of reason; neither our expectation nor our confidence threatens to render our totality of beliefs internally inconsistent, and irrationality requires inconsistency.

So, it turns out, the thesis that inductive reasoning is not justificatory reasoning does not imply that we ought not expect whatever we expect or that we really ought not to expect anything. Go ahead—expect that your hand will be warmed! And be confident that it will be! Just don't think that your expectation is well founded, even when it is the product of a strong induction from past experiences of bare hands and lit matches. (You are not being irrational in expecting your hand will be warmed; but, then, neither is Sally in expecting that your hand will not be cooled.)

4) A fourth misunderstanding is that the thesis implies that it is just as likely that your hand will be cooled the next time you bring it close to a lit match as that it will be warmed. Generally, this misunderstanding arises from interpreting the thesis that inductive reasoning is not justificatory reasoning to mean that each possible sort of future is as likely to be our future as every other sort of possible future is.

On one theory of probability, this understanding of the thesis is not a misunderstanding.

If we take the probability of an event of some type occurring to be relative to our beliefs, then, since our beliefs give us no reason to expect an event of one type rather than an event of a contrary type, each outcome is as likely as every other.

On another theory of probability, though, the idea that each outcome is as likely as every other does not follow from the thesis that inductive reasoning is not justificatory reason.

On this second theory of probability, the probability of an event of some type occurring is just another fact of nature with all the other facts of nature. Consider a fair flip of a fair coin. The probability of heads is .5, let us suppose, and that fact has nothing to do with any observer's beliefs. So, given this theory of probability, there might well be in nature a definite probability that the next time I bring my bare hand close to a lit match, my hand will be warmed, and that probability might be greater (or less) than the probability that my hand will be cooled. That it is more probable that my hand will be warmed than cooled (if it is more probable) is a fact. What the thesis that inductive reasoning is not justificatory reasoning implies here is just that we cannot with reason say what that probability is. The probability of my hand being warmed as I bring it close to a lit match might, in fact, be .95; but no one can have any reason for thinking that the probability of my hand being warmed is .95.

5) We believe that strong inductive arguments all of whose premises are true can be relied upon to generate predictions that will be borne out by the course of events. (We have assumed we believe this, though some philosophers doubt we do.) But, as we have seen, there is an argument that no inductive argument that has this belief as its conclusion can show us to be warranted in holding it. The critical argument purports to establish that any inductive defence of our belief will beg the question in favour of that belief. Since one is never warranted in holding a belief on the basis of a question-begging argument, one is not warranted in holding that inductive arguments can be relied upon to have true conclusions on the basis of an inductive argument.

A fifth misunderstanding results when students misidentify where the question is begged or where the circular reasoning occurs. The misunderstanding is to think that it is inductive reasoning generally that is question begging or circular. "One is not justified in believing that one's bare hand will be warmed the next time one brings it close to a lit match for one's argument that one's bare hand will be warmed begs the question." But no question is begged and no circle is found in the inductive argument that one's bare hand will be warmed. That argument goes as follows: (A) Every time in the past when I have brought my bare hand close to a lit match, my hand has been warmed, and I have many times in many different circumstances brought my bare hand close to a lit match; therefore, the next time I bring my bare hand close to a lit match, my hand will be warmed. What question is begged by this argument? (The answer: none. To see that no question is begged in this argument, try hard to find a question that is begged.)

It is only in the argument that since such arguments as (A) have so far tended to have true conclusions, (A) itself can be relied upon to have a true conclusion, that we find a question begged. The upshot is: not all inductive arguments are question begging. Ordinary inductive arguments with predictions as their conclusions generally are not question begging. What does beg an important question, though, is any inductive argument in favour of the claim that inductive arguments typically have true conclusions.

6) Finally, a sixth misunderstanding has it that the argument for the thesis that inductive reasoning is not justificatory reasoning shows (or purports to show) that inductive arguments cannot be relied upon to generate predictions that will be borne out by the course of events. This misunderstanding is often formulated as the claim that induction doesn't work.

The target of the argument that inductive reasoning is not justificatory reasoning is our belief that predictions generated by strong inductive arguments all the premises of which are

true can be relied upon to be borne out by events. That argument, if successful, shows that no inductive argument meant to justify our holding that belief actually does justify our holding it. (Inductive defences of inductive reasoning as justificatory reasoning beg the question, and a question-begging defence is no defence at all.) The misunderstanding comes with taking this argument to show that the target belief is *false*. The misunderstanding comes, that is, with taking the critical argument to show not simply that we have no reason for believing that inductive arguments can be relied upon, but rather that inductive arguments cannot be relied upon.

The mistake here is the common one of thinking that by criticising an argument one must be rejecting as false the conclusion of that argument. But that an argument fails to establish its conclusion does not mean that that conclusion is false. Maybe inductive arguments can indeed be relied upon to generate predictions that will be borne out by the course of events; the problem is that we cannot have reason to think that they can (at least not if our supposed reason consists in an inductive argument).

Nothing said so far (and nothing we will say below) does show or even is meant to show that induction does not work in generating true predictions. The argument that since induction has worked it will (continue to) work is a bad argument because it begs the question by using induction to come to its conclusion; but that it is a bad argument does not imply that its conclusion, that induction will (continue to) work, is false. Maybe induction will work, maybe it won't; but, our argument tells us, we can have no reason to think either one way or the other.

3. The complete argument that inductive reasoning is not justificatory reasoning

Not all arguments are inductive arguments. Some arguments are deductive. If we are to justify our believing that strong inductive arguments whose premises are true typically have conclusions that are true, we need some argument that shows that, indeed, strong inductive arguments whose premises are true typically have conclusions that are true. So far we have considered an inductive argument meant to show this, and we have noted that that argument begs the question in favour of induction. We have concluded from this that our believing that induction typically generates true predictions is without rational warrant. But we have come to our conclusion illicitly, for we have neglected the fact that not all arguments are inductive. We have not considered whether a deductive argument can show our belief to be false.

This is why we said, in section 3 of the previous chapter, that statement 7 in the argument presented there (“that a prediction is generated by a strong inductive argument with true premises gives us no more reason to accept that prediction as true than to reject it as false”), does not follow from the previous six statements in the argument. The argument presented there did not consider the possibility of a deductive defence of the thesis that inductive reasoning is justificatory reasoning. (We also noted the existence of this hole in the present chapter, in a parenthetical comment near the end of section 1.)

Here, then, is the complete argument to the conclusion that inductive reasoning is not justificatory reasoning.

1. If inductive reasoning is indeed justificatory reasoning, then we can possess in mind a good argument to the conclusion that predictions generated by strong inductive arguments all

the premises of which are true can be relied upon to be borne out by the course of events.

2. If there is a good argument to this conclusion, that argument will be either a good inductive argument or a good deductive argument.
3. There can be no good inductive argument that predictions generated by strong inductive arguments all the premise of which are true can be relied upon to be borne out by the course of events.
4. There can be no good deductive argument that predictions generated by strong inductive arguments all the premises of which are true can be relied upon to be borne out by the course of events.

Therefore: 5. There is no good argument we can possess in mind to the conclusion that predictions generated by strong inductive arguments all the premises of which are true can be relied upon to be borne out by the course of events.

Therefore: 6. Inductive reasoning is not justificatory reasoning.

This argument is a valid deductive argument. Statement 5 follows from statements 2, 3, and 4; if 2, 3, and 4 are true, then 5 must also be true. And statement 6 follows from statements 1 and 5; if 1 and 5 are true, then 6 must also be true. We cannot fault the reasoning that takes us from the premises of the argument to its conclusion (or, at least, so it seems to me). If we are to reject the conclusion, then, we must reject one or another of the premises.

Statements 1 and 2 we are taking for granted, though some philosophers would quarrel with one or the other of them. Statement 3 has to this point been our main subject of discussion. Now we want to know why we should accept statement 4, that there can be no good deductive argument in defence of the claim that inductive reasoning is justificatory reasoning.

A valid deductive argument can proceed either from one or more premises or from no premises at all. Consider a valid deductive argument that contains one or more premises. The conclusion of that argument will be a explicit statement of a proposition that, in some sense, is already contained within the premises. Such a deductive argument will, in effect, simply rearrange propositions already assumed in the argument to be true. But then it is a circular defence of its conclusion, for it assumes that conclusion to be true rather than shows it to be true. And a circular defence of a proposition gives one no reason to think that that proposition is true.

Now consider a valid deductive argument that proceeds from no premises at all. The conclusion of such an argument must be a tautology or, in other words, a truth of logic. It would be a proposition true whatever way the world is, for it assumes nothing about how the world is. So, if the proposition that inductive reasoning is justificatory reasoning can be defended by a valid deductive argument that proceeds from no premises at all, then that proposition must be a tautology or logical truth. A tautology or logical truth is a proposition whose negation is self-contradictory. Let us, then, negate the proposition that inductive reasoning is justificatory reasoning and see whether we can derive a contradiction from it. "It is not the case that inductive reasoning is justificatory reasoning": this is the statement we will assume in order to derive a contradiction and, thereby, to establish deductively that inductive

reasoning is justificatory reasoning. But there is no contradiction in this statement to be found. We might not like to entertain in mind the thought that it is not the case that inductive reasoning is justificatory reasoning (it is a scary thought, as we have said), but we can do so. Thus, the proposition that inductive reasoning is justificatory reasoning is not a tautology and, therefore, cannot be established by a valid deductive argument that assumes nothing.

And that is our argument that our firmly held belief that predictions generated by strong inductive arguments lacking false premises typically come true cannot be defended by a good deductive argument. If our valid deductive argument in favour of it makes any assumptions, then we will arrive at it only by already assuming it to be true. And if our deductive argument in favour of it makes no assumptions, then it will not arrive at it validly. No circular or invalid deductive argument in favour of a belief is any type of defence of that belief.

We must conclude, then, that statement 4 in our complete argument is true. There can be no good deductive argument to defend our belief that predictions generated by strong inductive arguments all the premises of which are true can be relied upon to be borne out by the course of events.

We now have before us the entire argument that inductive reasoning is not justificatory reasoning. It is not an easy argument to comprehend. It is long and complicated. Moreover, its conclusion is opposed to what we have long believed and, perhaps, what we naturally or innately believe. And its conclusion is unsettling and even frightening. Let us move on, then, to consider a variety of responses to the thesis that inductive reasoning is not justificatory reasoning and the argument we have developed for that thesis. In the next chapter, we will examine six popular but unsuccessful responses. In the chapter after that, we will examine two unpopular but successful responses.