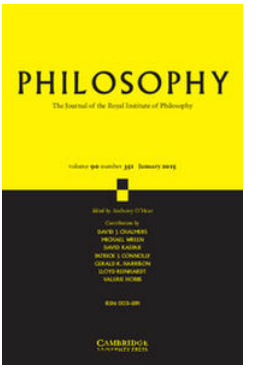

How Popper [Might Have] Solved the Problem of Induction

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The situation with Popper's philosophy is most peculiar. There are twelve or twenty folk, the self-styled 'Popperians', who think it is the bees-knees. Most philosophers ignore them. Popper's philosophy of science is popular among scientists. Most philosophers of science think it is fatally flawed. Popper talks about 'The Growth of Scientific Knowledge'. Most philosophers regard him as a sceptic who thinks scientists know nothing. Popper says he is a 'critical rationalist' and extols the virtues of reason. He is one of the *Four Irrationalists* discussed in a recent book of that name.

The problem of induction is the key to all this. Popper said, famously and immodestly, 'I think I have solved a major philosophical problem: the problem of induction'. He admitted that 'few philosophers' agree with him. He said this was because 'few philosophers have taken the trouble to study … my views'[1]. Popper's explanation of his neglect is as insulting as it mistaken. Many philosophers have studied his views *and found them wanting*. The most important reason for the peculiar state of affairs regarding Popper's philosophy is that his solution to the problem of induction is rejected. That is why Popper is dismissed as a sceptic and an irrationalist. That is why the Popperian edifice is viewed as a house of cards, which collapses as soon as its foundation is scrutinized.

What exactly *is* Popper's solution to the problem of induction? I think I know, and have tried several times to explain it, and to say why the key philosophical objections to it miss the mark. But the Popperians object violently to my views, and accuse me of a litany of sins (justificationism, psychologism, messing about with 'second world considerations', belief philosophy, and so forth). As for Popper himself, he never endorsed my account of what his solution is, and in the course of his own voluminous writings on the matter said things difficult to reconcile with that account. However, neither

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[1] K. R. Popper, *Objective Knowledge*, Oxford University Press, 1972, p. 1.

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did Popper ever explicitly reject my account. Perhaps he did not fully understand his own ideas. Perhaps I am the only person who understands Popper, including Popper himself! (This paradox is consistent with Popper's own view that any work has a 'life of its own' and may not be fully understood even by its producer.)

This centenary conference is a suitable occasion to revisit this issue. So I shall first explain again how I think Popper solved, or might have solved, the problem of induction. Then I shall defend that solution against the most widespread objections to it. I take no credit for what follows—I think I learned it from Popper. But I will take the blame, if I did not learn well and it is all wrong. That seems a suitable attitude on an occasion such as this.

1. The Problem of Induction and Popper's Solution

The problem of induction is posed by the following argument of David Hume's:

(1) We reason, and must reason, inductively.
(2) Inductive reasoning is logically invalid.
(3) To reason in a logically invalid way is irrational.
Therefore, we are, and must be, irrational.

The problem this argument poses is: can Hume's irrationalist conclusions be avoided? This formulation of the problem is Popper's. Other formulations are more common, such as 'Can induction be justified?' or even 'How can induction be justified?'. But these beg the question against some possible solutions, notably Popper's.

Popper's formulation of the problem highlights Hume's originality. That inductive reasoning is logically invalid (premise (2) above) had already been pointed out by Aristotle, Sextus Empiricus, Francis Bacon, and countless others. Hume's originality was to combine this well-known logical triviality with other things to produce an intellectual bombshell. What other things? Inductive reasoning is arguing from experience. It is arguing from the premise that all observed As were Bs to the conclusion that the next A will be B, or that all As are Bs. The invalidity of inductive reasoning means that no argument from experience can establish that its conclusion is true, or probable (more likely to be true than not). But it is only reasonable to believe something if you have shown that it is true, or probable (more likely to be true than not). *Ergo*, any experience-transcending or evidence-transcending belief is unreasonable. The Greeks thought we were rational animals. Hume thought us irrational, no better than dogs and cats, who are also inveterate inductive reasoners.

How Popper [Might Have] Solved the Problem of Induction

Hume's intellectual bombshell can be pedantically set out as follows:

> *Inductive scepticism*: Since induction is invalid, no evidence-transcending belief can be justified (shown to be true, or probable).
> *Justificationism*: It is only reasonable to believe what has been justified (shown to be true, or probable).
> Therefore *irrationalism*: No evidence-transcending belief is reasonable.

Many philosophers before Popper grappled with Hume. All of them accepted his first premise (1), that we do and must reason inductively. All of them disputed either (2), inductive reasoning is logically invalid, or (3), to reason in a logically invalid way is unreasonable, or both. Popper disputes (1). He says that induction is a 'myth'.

When Popper says that induction is a 'myth', is he making the factual or psychological claim that no one ever argues from experience? If he were, he would be refuted every time someone actually did argue from experience. No, it is Hume's assumption that we *must* reason inductively that is Popper's real target. Most philosophers share Hume's assumption. We must reason inductively if we are to have any justified evidence-transcending beliefs. Only justified beliefs can be reasonable beliefs. Hence, if we are to avoid Hume's irrationalism regarding evidence-transcending beliefs, we must reject his inductive scepticism.

Popper also rejects the irrationalism. But he accepts the inductive scepticism. Hence, he must reject justificationism. He must think that it may be reasonable to believe what has not been justified, established as true or probable. Most philosophers think this is crazy. After all, to believe something is to think it true. So a reason for believing something must show that it is true or probably true.

However, the term 'belief' is ambiguous. It can refer to the thing believed, and it can refer to the act or state of believing that thing. Talk of 'reasons for beliefs' inherits this ambiguity. Do we mean a reason for the thing believed, or a reason for the believing of it? Obviously, we mean the latter. After all, one person might have some reason for believing something, and another person believe the same thing for a quite different reason or for no reason at all. Suppose, as is traditional, that the thing believed is a *proposition*. What might a reason for a *proposition* be? Logic tells us. A conclusive reason for a proposition P is another proposition R that entails that P is true. And an inconclusive reason for a proposition P is another proposition R that entails that P is probably true, more likely true than not, or at least, more probable than it was without R. (Of course, we need a

logical theory of probability, a generalization of deductive logic, to make good the idea of one proposition being an inconclusive reason for another.)

Now the mere existence of a reason for a proposition cannot be a reason for believing that proposition. After all, there are always propositions that entail any proposition. And if a theory of logical probability can be worked out, there are always propositions that 'probability' any proposition. If propositions were reasons for believing propositions, there would be (conclusive or inconclusive) reasons for believing any proposition whatever.

No, it must be that *believing* one thing might be a reason for believing another. After all, people do come to believe things by inferring them from other things that they believe. So perhaps we should say that a reason for believing P is that you believe R, and infer P from R. But then everybody might have a conclusive reason for everything they believe, if they believe P and waste mental energy inferring P from itself! Or if they believe some stronger R from which they deduce P. Or if they believe some weaker R which 'probabilifies' P (assuming that a theory of logical probability can be worked out).

When is believing R and inferring P from it, a *good* reason in the epistemic sense for believing P? Well, your belief in R had better be reasonable, and your inference had better be valid. (Here, deductivists like Popper and me part company with inductivists. Deductivists think that the only valid inferences are deductively valid inferences, that there is no inductive logic.) But it cannot be that the *only* good reason for believing P is that you have inferred it from another belief R, for which you have good reason. That is *logomania*, the view that only reason or reasoning provides a good reason for believing anything. Logomania leads to infinite regress, as sceptics long ago pointed out. All inferential beliefs (beliefs obtained by inference from other beliefs) must rest on non-inferential beliefs. But logomania entails that non-inferential beliefs are unreasonable—from which it follows that all beliefs are unreasonable.

So, everybody who is not a total irrationalist must reject logomania. Everybody who is not a total irrationalist must think there are good reasons for believing P that do not involve inferring P from other propositions we believe. Everybody who is not a total irrationalist must think that some non-inferential beliefs are reasonable beliefs.

The prime candidate for non-inferential belief is, of course, perceptual belief. I take for granted that people acquire perceptual beliefs as a result of their perceptual experience, and that this is not

to be analysed as inferring the propositions believed from any other propositions. Perceptual experiences cause us to acquire perceptual beliefs. Having a table-experience or seeming to see a table causes us to come to believe that there is a table in front of us. Coming to believe something is an act or action that we perform. Since reasons for actions are also causes, seeming to see a table is both a cause and a reason for the act of coming to believe that there is a table. But having a table-experience or seeming to see a table is not a reason for the content of the belief, the proposition that there is a table. Only a proposition can be a reason for a proposition. The distinction between belief-acts (believings) and belief-contents (propositions) is crucial here.

Is perceptual experience a good reason, in the epistemic sense, for perceptual believing? I propose that it is. A good reason for believing that there is a table in front of you is that you seem to see one. Perceptual beliefs (acts of believing) are reasonable beliefs (acts of believing). Perceptual beliefs are not necessarily true beliefs. And if you somehow find out that your perceptual belief is false, then it will no longer be reasonable to persist in that belief. But unless and until you find out that a perceptual belief is false, it is reasonable to think it true.

I said that having a table-experience is not a reason for the proposition that there is a table in front of you. But what if we formulate a proposition about the experience? What is the relation between the proposition 'I have a table-experience' (E) and the proposition 'There is a table in front of me' (T)? Obviously, E does not entail T—nor, according to deductivists, is there any fancy non-deductive logic in which the inference from E to T is 'sound' or 'cogent'. But T, combined with other assumptions, does entail or predict or explain E. So E represents the results of a successful test of H. And if in any doubt, there are other tests that we can perform. In plain English, we can see whether we can touch as well as see the table, or ask others if they also see it, and so forth. All this is no more than common sense.

Suppose we accept that unrefuted perceptual beliefs are reasonable non-inferential beliefs, and now consider non-perceptual beliefs. It is tempting to suppose that non-perceptual beliefs are only reasonable if they can be validly inferred from reasonable perceptual beliefs. But this is where Hume's inductive scepticism comes in! If inductive scepticism is correct, then non-perceptual or evidence-transcending beliefs cannot be validly inferred from perceptual beliefs or evidence. It follows, if justificationism is correct as well, that non-perceptual or evidence-transcending beliefs cannot be reasonable beliefs.

If we accept inductive scepticism, but reject this irrationalist conclusion, then we must reject justificationism. Logomania does not apply to our perceptual beliefs (believings). And it does not extend to our evidence-transcending beliefs (believings) either. We now need a positive story about which evidence-transcending believings are reasonable, and why. Popper's critical rationalist story is as follows. Faced with an evidence-transcending hypothesis H, there are two ways we can proceed. We can try to justify H, give reasons for it, show that it is true or probable. Or we can try to criticize H, give reasons against it, show that it is false. Hume's inductive scepticism means that the former will not work. We should forsake the way of justification in favour of the way of criticism. No invalid inductive reasoning is involved in rejecting an evidence-transcending hypothesis H as false because it contradicts some perceptual or evidential belief. But suppose our critical endeavours fail, and H stands up to our efforts to criticize it. Then this fact is a good reason to believe H, tentatively and for the time being, *though it is not a reason for the hypothesis H itself*.

Our critical endeavours may involve us in believing, or coming to believe, certain evidential propositions E. But E is not a conclusive reason for H, since induction is invalid. Nor is E an inconclusive reason for H, since probabilistic induction does not work. Never mind. We do not *infer* H from E, and believe it because of having made such an inference. Rather, our reason for believing H is the fact that (putting it in a nutshell) E has not falsified H. What of the evidence, E? We do not *infer* E from anything more basic, and believe it because of having made such an inference. Our reason for believing E is (again putting it in a nutshell) that it gives a natural explanation of our perceptual experience.

2. Popperian Scholasticism

By 'Popperian scholasticism' I mean the tendency to squabble about words, in particular, about the word 'belief'. Hume's conclusion was that no evidence-transcending belief is reasonable. Anybody who disagrees with this conclusion must think that some-evidence transcending beliefs are reasonable. But Popperians say we should forget about beliefs and their reasonableness, drop 'belief philosophy', engage instead in 'epistemology without a knowing subject'. We should focus, not on 'second world' or psychological considerations, but on 'third world' considerations about theories, propositions, the contents of beliefs.

Popper says that, like E. M. Forster, he 'does not believe in

belief'. What Forster did not believe in was unreasonable beliefs, dogmas, articles of faith, irrational commitments. Forster was giving an eminently sensible piece of (second world) advice, that many philosophers would agree with. The advice assumes that there is a difference between reasonable and unreasonable beliefs. Hume's shocking conclusion was that evidence-transcending beliefs are unreasonable, however tentatively held.

Popper preferred to talk, not of believing a theory or thinking it true, but of *preferring* one theory to another, or *choosing* one theory over another, or *adopting* one theory rather than another. Popper also said that the aim of scientific theorizing is truth. But to prefer or choose or adopt a theory, when your aim is truth, is to believe it. David Miller prefers to talk of *classifying things as true* rather than *believing* them.[2] But to classify something as true is also to believe it. These terminological fads sit oddly with Popper's repeated declaration that 'words do not matter'. They also sit oddly with the distinction between second and third world considerations. Choosing, preferring, adopting and classifying are all things that epistemic subjects do, are all second world phenomena.

Connected with the terminological fads is the matter of *verisimilitude*. Popper dreamt of working out a theory of verisimilitude or closeness to the truth, which would enable us to say that one false theory is closer to the truth than another false theory. Armed with such a theory, we could still aim at truth, and prefer one theory to another, yet believe neither theory to be true—provided we believe that this false theory is closer to the truth than that one. The verisimilitude project, appealing though it was, fell on hard times, for reasons that need not now concern us. (I have also come to suspect that verisimilitude was unnecessary, anyway. What we need is not verisimilitude, but rather *approximate truth*, to be analysed as simple truth of approximations, or of parts of theories. But this need not now concern us, either.) What does concern me here is that dropping truth in favour of verisimilitude cuts no *epistemic* ice. Judgments of verisimilitude depend upon judgments of truth, and are just as conjectural as judgments of truth. If belief in any evidence-transcending hypothesis is unreasonable, so is belief that one evidence-transcending hypothesis is closer to the truth than another. Popper, who started the verisimilitude industry, made this very clear at the outset (although some of his later formulations muddied the waters).

[2] See David Miller, *Critical Rationaliam: A Restatement and Defence*, University of Chicago Press, 1994, further discussed in my *Essays on Realism and Rationalism*, Rodopi, Amsterdam and Atlanta, Georgia, Ch 15, section 10.

Many philosophers, browbeaten by Hume, give up on truth as the aim of science and put something weaker in its place. Bas van Fraassen's 'empirical adequacy' is the best-known and most-discussed example[3]. We are not to believe (think true) any evidence-transcending hypothesis. Instead, we may only believe (think true) a meta-claim to the effect that an evidence-transcending hypothesis is empirically adequate, contains nothing but truths about observables. Meta-claims about empirical adequacy and the like succumb to analogues of Humean scepticism and irrationalism, since empirical adequacy is evidence-transcending just as truth is. For this reason John Watkins waters down the aim of science still further, into empirical adequacy *as far as we have looked into the matter*.[4]

Other philosophers say we aim at truth, but go in for some peculiar new epistemic conception of what truth is. We might propose an *empirical adequacy theory of truth*, according to which an empirically adequate theory is *by definition* a true theory. (van Fraassen did not, of course, propose such a theory, despite what Arthur Fine says.) Again, to believe a theory (think it true) turns out, when the meaning of 'true' is cashed out, to be believing a meta-claim of empirical adequacy.

None of this is answering Hume—it is agreeing with him and changing the subject. You do not answer Hume by confining yourself to 'third world considerations', or by striving ineffectually to avoid the term 'belief', or dropping truth as our aim, or by going in for some peculiar epistemic concept of truth. You only answer Hume by making out that his inductive scepticism is false, or that his justificationism is false. Most answers take the former course. Popper, rightly understood, takes the latter.

3. Does Popper Smuggle in Induction?

The most widespread objection to Popper's answer to Hume is that it must smuggle induction in somewhere. This is the objection urged, in one form or another, by the countless philosophers who have read Popper and found his theory wanting. But, I shall argue,

[3] See Bas van Fraassen, *The Scientific Image*, Oxford University Press, 1980, further discussed in my *Essays on Realism and Rationalism*, Ch. 5.

[4] See John Watkins, *Science and Scepticism*, (London: Hutchinson, 1984), further discussed in my 'Saving Science from Scepticism', in Fred D'Ågostino and I. C. Jarvie (eds), *Freedom and Rationality: Essays in Honor of John Watkins* (Boston Studies in the Philosophy of Science, Vol. 117), (Kluwer: Dordrecht, Boston and London, 1989).

the philosophers who press this objection *themselves smuggle in precisely the assumption that Popper rejects*.

To investigate this, let us confine ourselves, as Popper's critics do, to the case of a severely tested but unrefuted hypothesis, which enjoys a high 'degree of corroboration'. Popper says this gives us good reason to adopt the hypothesis as true (that is, believe it), and to use it to make predictions. Here is the Achilles Heel where induction is smuggled in! Popper must be assuming that predictions from well-corroborated hypotheses will be true, while predictions from refuted hypotheses will be false. Or he must be assuming that predictions from well-corroborated hypotheses are more likely to be true (more probable) than predictions from refuted ones. Either way, induction is smuggled in. His 'degrees of corroboration' were supposed to be backward-looking reports on past successes and failures. Backward-looking reports say nothing about future performance. So Popper must be smuggling in an inductive principle linking past success to future performance, he must be assuming that corroboration is a guide to truth or high probability. Without this assumption, he must endorse Humean irrationalism about all evidence-transcending beliefs.

This criticism assumes that a reason for believing something must be a reason for what is believed. That is why the critic says that Popper must be assuming that corroboration is a guide to truth or high probability. But Popper has rejected the view that a reason for believing something must be a reason for what is believed. Popper agrees with Hume that corroboration does not show that a hypothesis is true or probable, is not a reason for what is believed. But it is a reason for believing the hypothesis. The critic begs the question, by taking for granted precisely what Popper denies.

An epistemic principle lies behind all this. The principle says that the fact a hypothesis is well-corroborated is a good reason to adopt it, tentatively, as true. Call this principle CR (for 'corroboration report', or for 'critical rationalism'). Is CR an inductive principle? Well, traditional inductive principles like 'Nature is uniform' were metaphysical principles, whereas CR is epistemic. Traditional principles were metaphysical because you need a metaphysical principle to show truth or high probability. And tradition—specifically, justificationism—demanded that a reason for believing something must be a reason for what is believed. This is what Popper denies. Of course, if you assume justificationism, you will also assume that lying behind CR there must be a metaphysical principle linking corroboration with truth or probability. After all, what reason might we give for CR, other than such a metaphysical principle? Induction is smuggled in after all.

But epistemology is one thing, metaphysics is another. Call CR an 'epistemic inductive principle', if you like. This principle neither implies nor assumes that well-corroborated theories are true, or more likely to be true than not. It says only that it is reasonable to adopt such theories as true. Can we separate epistemology and metaphysics? Justificationism says not—a reason for believing (epistemology) must be a reason for what is believed (metaphysics). Can it be reasonable to believe falsely? If it can, then the (epistemic) reason for believing falsely cannot be a conclusive (metaphysical) reason for what is believed. Everybody will agree that any reasonable theory of reasonable belief must make room for reasonable yet false belief. Everybody will agree, too, that if the state of the critical discussion changes, and we find a reason to think something false, then it is no longer reasonable to adopt it as true. What we say in such cases is that what we reasonably believed turned out to be wrong, not that it was wrong or unreasonable for us to have believed it. Can it be reasonable to believe unreliably? If it can, then the reason for believing unreliably cannot be an inconclusive reason for what is believed. But surely corroborated hypothesis must be, if not true, at least more likely to be true than not, if it is reasonable for us to believe them? Surely, we must show that the method of corroboration is a reliable method, which produces more truth beliefs than false ones, if it is to be a rational method? No. just as a belief need not be true, or shown true, to be reasonable, so also a method of forming beliefs need not be reliable, or shown reliable, to be reasonable. Of course, if the state of the critical discussion changes, and we find out that the method of corroboration is *unreliable*, then it will no longer be rational to persist with it. No sceptic has shown this, but methods are corrigible, too. CR is an epistemic principle only, about what is reasonable to think true, not a metaphysical principle about what is true or more likely true than not. If you assume that a reason for believing something must be a reason for what is believed, you will also assume that this epistemic principle must be underpinned by a metaphysical one. But this is justificationism again.

The demand for a reason for CR assumes for epistemology precisely what critical rationalist epistemology denies. It assumes that a reason for adopting CR must be a reason for CR. A consistent critical rationalist should refuse to give a reason for CR. As the critic rightly sees, a reason for CR will be a metaphysical inductive principle, anathema to critical rationalists, and no use anyway because we would immediately be asked for a reason for the reason, and so on, *ad infinitum*.

This does not mean that CR must be adopted arbitrarily or irrationally. A consistent critical rationalist can give a reason for *adopting* CR. The reason for adopting CR is that it has withstood philosophical criticism better than rival epistemic principles. This is what Popper does when he describes our epistemic predicament as he sees it. There are no reasons, conclusive or inconclusive, for evidence-transcending hypotheses. Induction being invalid, there are no conclusive reasons for them. Probabilistic induction having foundered, there are no inconclusive reasons for them either. Combine these Humean sceptical results with justificationism, and the result is Humean irrationalism. But if we reject justificationism, a new possibility opens up. There is nothing more rational than a thorough and searching critical discussion. Such a discussion may give us good reason for believing an evidence-transcending hypothesis that survives it—though not, of course, a good reason for that hypothesis itself. Such is the reason for *adopting* CR.

Some of this, such as the rejection of probabilistic induction, is still contentious. But even if we set that aside, and accept that CR withstands philosophical criticism better than rival principles, a new objection presents itself. *All this is circular*! We are being told that it is reasonable to adopt CR *by CR's own standard of when it is reasonable to adopt something*. Nobody sceptical of CR is going to find this convincing.

Is this new objection devastating? I submit that it is not. For what are the alternatives to circular reasoning of this kind? You might give no reason for adopting CR, and admit that your belief in your theory of reasonable belief is irrationally adopted. Or you might give some reason for adopting CR that is not of a critical rationalist kind, again admitting that your belief in your theory of reasonable belief is not itself reasonable by its own lights, and inviting the demand for a reason for your reason, *ad infinitum*. Circularity is preferable to either of these alternatives—*just*.

You can count this an objection to CR if you like. But take comfort from this—*any general theory of reasonable belief will be subject to the same objection*. For any general epistemic theory is either reasonably adopted by its own lights (circularity), or not reasonably adopted by any lights (irrationalism), or reasonably adopted by other lights (hence irrational by its own lights once again). So this objection to CR, if it is an objection, cannot tell against CR and in favour of any rival view.

[It was William Warren Bartley III who urged the superiority of a *comprehensive* rationalism, a rationalism that could be rationally

adopted by its own lights, a rationalism that could subsume itself. Anything less is subject to the *Tu Quoque Argument*—'So you too are irrational—about your theory of rationality!'. Robert Nozick has said that circularity or self-subsumption of this kind is not a vice, but a virtue. I disagree. I disagree because self-subsumption is too easily had. 'My granny told me that I ought to believe everything she tells me' subsumes itself—but it is no triumph. Circularity or self-subsumption is no virtue. It is merely, at this level of abstraction, the least of the vices.]

4. Conjectural Knowledge

Popper's last major attempt to explain his solution to the problem of induction was called 'Conjectural Knowledge: My Solution of the Problem of Induction'. It is one of Popper's most scholastic productions.[5] Despite all the scholasticisms, Popper nowhere defines what 'conjectural knowledge' is. I suggest the following definition on his behalf: A conjecturally knows that P if and only if (a) A believes that P, (b) P is true, and (c) A reasonably believes (is justified in believing) that P, in the sense of CR. The parallel with the traditional justified true belief (JTB) account is obvious. Like that account, it denies that we can know a falsehood. (I do not agree with those Popperians who flirt with the idea that 'false

[5] Consider, for example, the following (Popper, *Objective Knowledge*, pp. 21–2):

> '*Pr1* Upon what theory should we rely for practical action, from a rational point of view?
> *Pr2* Which theory should we prefer for practical action, from a rational point of view?
> My answer to *Pr1* is: From a rational point of view, we should not "rely" on any theory, for no theory has been shown to be true, or can be shown to be true.
> My answer to *Pr2* is: But we should *prefer* as a basis for action the best-tested theory,
> In other words [sic!], there is no "absolute reliance"; but since we have to choose, it will be "rational" to choose the best-tested theory.…
> Of course, in choosing the best-tested theory as a basis for action, we rely on it in some sense of the word. It may even be described as the *most* "reliable" theory available, in some sense of this term. Yet this does not say that it is "reliable"….'

What are we to make of this passage, with its unexplained distinction between 'rely for practical action' and 'prefer for practical action', its plethora of unexplained scare quotes around the word 'rely', its talk of senses of the word 'reliable' that are nowhere explained, and so on?

knowledge' makes sense.) It differs from the traditional JTB account only over the 'justification condition'. It rejects the traditional justificationist principle. Indeed, if you accept that principle, justified true believings must be justified true beliefs.

Let us leave knowledge behind, and get back to belief. I have talked much about belief, about its act/content ambiguity, and about the critical rationalist view that we can justify an act of believing without justifying a belief-content. What about Forster's dictum, 'I do not believe in belief', which Popper said he agreed with? Well, critical rationalism means that Forster's dictum contains a deeper truth—deeper than 'I do not believe in dogmatically-held irrational commitments'. Beliefs are transitory—beliefs change. *Reasonable* beliefs are transitory, too. It was reasonable for Aristotle to believe things (given the state of the critical discussion in his time) that is not reasonable for us to believe (given the state of the critical discussion in our time). The epistemic problem of problems is: What ought I to believe? Critical rationalism does solve this problem, rather than dodging it. It says that we ought to believe that which best survives the critical discussion in our time. This simple formula takes us outside the self-defeating and played-out circle of justificationist ideas, and into an exciting arena where the theory of criticism occupies centre-stage. If the foregoing is correct, then Popper does answer Hume, as opposed to changing the subject. But Popper's answer to Hume simultaneously shows that we can get beyond Hume's problem. Induction or inductive logic is a myth, after all, because we do not need it. Conjectures and critical inquiry about them is all we need.

Karl Popper was right to call his paper 'Conjectural Knowledge—My Solution of the Problem of Induction'. And despite his critics, he was right to talk about 'The Growth of Scientific Knowledge'. Science is our best epistemic engine. Its self-corrective critical method has provided us with lots of knowledge—conjectural knowledge. Science contains much that we believe, that is true, and that we reasonably believe to be true.

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