

### 3 Knowledge without Authority (1960)\*

by Karl Popper

I

This part of my lecture might be described as an attack on *empiricism*, as formulated for example in the following classical statement of Hume's: 'If I ask why you believe any particular matter of fact . . . , you must tell me some reason; and this reason will be some other fact, connected with it. But as you cannot proceed after this manner, *in infinitum*, you must at last terminate in some fact, which is present to your memory or senses; or must allow that your belief is entirely without foundation.'

The problem of the validity of empiricism may be roughly put as follows: is observation the ultimate source of our knowledge of nature? And if not, what are the sources of our knowledge?

These questions remain, whatever I may have said about Bacon, and even if I should have managed to make those parts of his philosophy on which I have commented somewhat unattractive for Baconians and for other empiricists.

The problem of the source of our knowledge has recently been restated as follows. If we make an assertion, we must justify it; but this means that we must be able to answer the following questions.

'How do you know? What are the sources of your assertion?'

This, the empiricist holds, amounts in its turn to the question,

'What observations (or memories of observations) underlie your assertion?'

I find this string of questions quite unsatisfactory.

First of all, most of our assertions are not based upon observations, but upon all kinds of other sources. 'I read it in *The Times*' or perhaps 'I read it in the *Encyclopaedia Britannica*' is a

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more likely and a more definite answer to the question 'How do you know?' than 'I have observed it' or 'I know it from an observation I made last year'.

'But', the empiricist will reply, 'how do you think that *The Times* or the *Encyclopaedia Britannica* got their information? Surely, if you only carry on your inquiry long enough, you will end up with reports of the observations of eyewitnesses (sometimes called "protocol sentences" or - by yourself - "basic statements"). Admittedly', the empiricist will continue, 'books are largely made from other books. Admittedly, a historian, for example, will work from documents. But ultimately, in the last analysis, these other books, or these documents, must have been based upon observations. Otherwise they would have to be described as poetry, or invention, or lies, but not as testimony. It is in this sense that we empiricists assert that observation must be the ultimate source of our knowledge.'

Here we have the empiricist's case, as it is still put by some of my positivist friends.

I shall try to show that this case is as little valid as Bacon's; that the answer to the question of the sources of knowledge goes against the empiricist; and, finally, that this whole question of ultimate sources - sources to which one may appeal, as one might to a higher court or a higher authority - must be rejected as based upon a mistake.

First I want to show that if you actually went on questioning *The Times* and its correspondents about the sources of their knowledge, you would in fact never arrive at all those observations by eyewitnesses in the existence of which the empiricist believes. You would find, rather, that with every single step you take, the need for further steps increases in snowball-like fashion.

Take as an example the sort of assertion for which reasonable people might simply accept as sufficient the answer 'I read it in *The Times*'; let us say the assertion 'The Prime Minister has decided to return to London several days ahead of schedule'. Now assume for a moment that somebody doubts this assertion, or feels the need to investigate its truth. What shall he do? If he has a friend in the Prime Minister's office, the simplest and most direct way would be to ring him up; and if this friend corroborates the message, then that is that.

In other words, the investigator will, if possible, try to check,

or to examine, *the asserted fact itself*, rather than trace the source of the information. But according to the empiricist theory, the assertion 'I have read it in *The Times*' is merely a first step in a justification procedure consisting in tracing the ultimate source. What is the next step?

There are at least two next steps. One would be to reflect that 'I have read it in *The Times*' is also an assertion, and that we might ask 'What is the source of your knowledge that you read it in *The Times* and not, say, in a paper looking very similar to *The Times*?' The other is to ask *The Times* for the sources of its knowledge. The answer to the first question may be 'But we have only *The Times* on order and we always get it in the morning', which gives rise to a host of further questions about sources which we shall not pursue. The second question may elicit from the editor of *The Times* the answer: 'We had a telephone call from the Prime Minister's office.' Now according to the empiricist procedure, we should at this stage ask next: 'Who is the gentleman who received the telephone call?' and then get his observation report; but we should also have to ask that gentleman: 'What is the source of your knowledge that the voice you heard came from an official in the Prime Minister's office?', and so on.

There is a simple reason why this tedious sequence of questions never comes to a satisfactory conclusion. It is this. Every witness must always make ample use, in his report, of his knowledge of persons, places, things, linguistic usages, social conventions, and so on. He cannot rely merely upon his eyes or ears, especially if his report is to be of use in justifying any assertion worth justifying. But this fact must of course always raise new questions as to the sources of those elements of his knowledge which are not immediately observational.

This is why the programme of tracing back all knowledge to its ultimate source in observation is logically impossible to carry through: it leads to an infinite regress. (The doctrine that truth is manifest cuts off the regress. This is interesting because it may help to explain the attractiveness of that doctrine.)

I wish to mention, in parentheses, that this argument is closely related to another – that all observation involves interpretation in the light of our theoretical knowledge, or that pure observational knowledge, unadulterated by theory, would, if at all possible, be

utterly barren and futile. [See the last paragraph of selection 11, section 1, below.]

The most striking thing about the observationalist programme of asking for sources – apart from its tediousness – is its stark violation of common sense. For if we are doubtful about an assertion, then the normal procedure is to test it, rather than to ask for its sources; and if we find independent corroboration, then we shall often accept the assertion without bothering at all about sources.

Of course there are cases in which the situation is different. Testing an *historical* assertion always means going back to sources; but not, as a rule, to the reports of eyewitnesses.

Clearly, no historian will accept the evidence of documents uncritically. There are problems of genuineness, there are problems of bias, and there are also such problems as the reconstruction of earlier sources. There are, of course, also problems such as: was the writer present when these events happened? But this is not one of the characteristic problems of the historian. He may worry about the reliability of a report, but he will rarely worry about whether or not the writer of a document was an eyewitness of the event in question, even assuming that this event was of the nature of an observable event. A letter saying 'I changed my mind yesterday on this question' may be most valuable historical evidence, even though changes of mind are unobservable (and even though we may conjecture, in view of other evidence, that the writer was lying).

As to eyewitnesses, they are important almost exclusively in a court of law where they can be cross-examined. As most lawyers know, eyewitnesses often err. This has been experimentally investigated, with the most striking results. Witnesses most anxious to describe an event as it happened are liable to make scores of mistakes, especially if some exciting things happen in a hurry; and if an event suggests some tempting interpretation, then this interpretation, more often than not, is allowed to distort what has actually been seen.

Hume's view of historical knowledge was different: '... we believe', he writes in the *Treatise*, 'that CAESAR was kill'd in the senate-house on the *ides* of *March* ... because this fact is establish'd on the unanimous testimony of historians, who agree to assign this

precise time and place to that event. Here are certain characters and letters present either to our memory or senses; which characters we likewise remember to have been us'd as the signs of certain ideas; and these ideas were either in the minds of such as were immediately present at that action, and receiv'd the ideas directly from its existence; or they were deriv'd from the testimony of others, and that again from another testimony . . . 'till we arrive at those who were eye-witnesses and spectators of the event.'

It seems to me that this view must lead to the infinite regress described above. For the problem is, of course, whether 'the unanimous testimony of historians' is to be accepted, or whether it is, perhaps, to be rejected as the result of their reliance on a common yet spurious source. The appeal to 'letters present either to our memory or senses' cannot have any bearing on this or on any other relevant problem of historiography.

## II

But what, then, are the sources of our knowledge?

The answer, I think, is this: there are all kinds of sources of our knowledge; but *none has authority*.

We may say that *The Times* can be a source of knowledge, or the *Encyclopaedia Britannica*. We may say that certain papers in the *Physical Review* about a problem in physics have more authority, and are more of the character of a source, than an article about the same problem in *The Times* or the *Encyclopaedia*. But it would be quite wrong to say that the source of the article in the *Physical Review* must have been wholly, or even partly, observation. The source may well be the discovery of an inconsistency in another paper, or say, the discovery of the fact that a hypothesis proposed in another paper could be tested by such and such an experiment; all these non-observational discoveries are 'sources' in the sense that they all add to our knowledge.

I do not, of course, deny that an experiment may also add to our knowledge, and in a most important manner. But it is not a source in any ultimate sense. It has always to be checked: as in the example of the news in *The Times* we do not, as a rule, question the eyewitness of an experiment, but, if we doubt the result, we may repeat the experiment, or ask somebody else to repeat it.

The fundamental mistake made by the philosophical theory of the ultimate sources of our knowledge is that it does not distinguish clearly enough between questions of origin and questions of validity. Admittedly, in the case of historiography, these two questions may sometimes coincide. The question of the validity of an historical assertion may be testable only, or mainly, in the light of the origin of certain sources. But in general the two questions are different; and in general we do not test the validity of an assertion or information by tracing its sources or its origin, but we test it, much more directly, by a critical examination of what has been asserted – of the asserted facts themselves.

Thus the empiricist's questions 'How do you know? What is the source of your assertion?' are wrongly put. They are not formulated in an inexact or slovenly manner, but *they are entirely misconceived*: they are questions that beg for an authoritarian answer.

## III

The traditional systems of epistemology may be said to result from yes-answers or no-answers to questions about the sources of our knowledge. *They never challenge these questions, or dispute their legitimacy*; the questions are taken as perfectly natural, and nobody seems to see any harm in them.

This is quite interesting, for these questions are clearly authoritarian in spirit. They can be compared with that traditional question of political theory, 'Who should rule?', which begs for an authoritarian answer such as 'the best', or 'the wisest', or 'the people', or 'the majority'. (It suggests, incidentally, such silly alternatives as 'Who should be our rulers: the capitalists or the workers?', analogous to 'What is the ultimate source of knowledge: the intellect or the senses?') This political question is wrongly put and the answers which it elicits are paradoxical [see selection 25 below]. It should be replaced by a completely different question such as '*How can we organize our political institutions so that bad or incompetent rulers (whom we should try not to get, but whom we so easily might get all the same) cannot do too much damage?*' I believe that only by changing our question in this way can we hope to proceed towards a reasonable theory of political institutions.

The question about the sources of our knowledge can be replaced in a similar way. It has always been asked in the spirit of: 'What are the best sources of our knowledge – the most reliable ones, those which will not lead us into error, and those to which we can and must turn, in case of doubt, as the last court of appeal?' I propose to assume, instead, that no such ideal sources exist – no more than ideal rulers – and that *all* 'sources' are liable to lead us into error at times. And I propose to replace, therefore, the question of the sources of our knowledge by the entirely different question: 'How can we hope to detect and eliminate error?'

The question of the sources of our knowledge, like so many authoritarian questions, is a *genetic* one. It asks for the origin of our knowledge, in the belief that knowledge may legitimize itself by its pedigree. The nobility of the racially pure knowledge, the untainted knowledge, the knowledge which derives from the highest authority, if possible from God: these are the (often unconscious) metaphysical ideas behind the question. My modified question, 'How can we hope to detect error?' may be said to derive from the view that such pure, untainted and certain sources do not exist, and that questions of origin or of purity should not be confounded with questions of validity, or of truth. This view may be said to be as old as Xenophanes. Xenophanes knew that our knowledge is guesswork, opinion – *doxa* rather than *epistēmē* – as shown by his verses [quoted on p.31 above]. Yet the traditional question of the authoritative sources of knowledge is repeated even today – and very often by positivists and by other philosophers who believe themselves to be in revolt against authority.

The proper answer to my question 'How can we hope to detect and eliminate error?' is, I believe, 'By criticizing the theories or guesses of others and – if we can train ourselves to do so – by criticizing our own theories or guesses.' (The latter point is highly desirable, but not indispensable; for if we fail to criticize our own theories, there may be others to do it for us.) This answer sums up a position which I propose to call 'critical rationalism'. It is a view, an attitude, and a tradition, which we owe to the Greeks. It is very different from the 'rationalism' or 'intellectualism' of Descartes and his school, and very different even from the epistemology of Kant. Yet in the field of ethics, of moral

knowledge, it was approached by Kant with his *principle of autonomy*. This principle expresses his realization that we must not accept the command of an authority, however exalted, as the basis of ethics. For whenever we are faced with a command by an authority, it is for us to judge, critically, whether it is moral or immoral to obey. The authority may have power to enforce its commands, and we may be powerless to resist. But if we have the physical power of choice, then the ultimate responsibility remains with us. It is our own critical decision whether to obey a command; whether to submit to an authority.

Kant boldly carried this idea into the field of religion: '... in whatever way', he writes, 'the Deity should be made known to you, and even ... if He should reveal Himself to you: it is you ... who must judge whether you are permitted to believe in Him, and to worship Him.'

In view of this bold statement, it seems strange that in his philosophy of science Kant did not adopt the same attitude of critical rationalism, of the critical search for error. I feel certain that it was only his acceptance of the authority of Newton's cosmology – a result of its almost unbelievable success in passing the most severe tests – which prevented Kant from doing so. If this interpretation of Kant is correct, then the critical rationalism (and also the critical empiricism) which I advocate merely put the finishing touch to Kant's own critical philosophy. And this was made possible by Einstein, who taught us that Newton's theory may well be mistaken in spite of its overwhelming success.

So my answer to the questions 'How do you know? What is the source or the basis of your assertion? What observations have led you to it?' would be: 'I do not know: my assertion was merely a guess. Never mind the source, or the sources, from which it may spring – there are many possible sources, and I may not be aware of half of them; and origins or pedigrees have in any case little bearing upon truth. But if you are interested in the problem which I tried to solve by my tentative assertion, you may help me by criticizing it as severely as you can; and if you can design some experimental test which you think might refute my assertion, I shall gladly, and to the best of my powers, help you to refute it.'

This answer applies, strictly speaking, only if the question is asked about some scientific assertion as distinct from an historical

one. If my conjecture was an historical one, sources (in the non-ultimate sense) will of course come into the critical discussion of its validity. Yet fundamentally, my answer will be the same, as we have seen.

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It is high time now, I think, to formulate the epistemological results of this discussion. I will put them in the form of nine theses.

(1) There are no ultimate sources of knowledge. Every source, every suggestion, is welcome; and every source, every suggestion, is open to critical examination. Except in history, we usually examine the facts themselves rather than the sources of our information.

(2) The proper epistemological question is not one about sources; rather, we ask whether the assertion made is true – that is to say, whether it agrees with the facts. (That we may operate, without getting involved in antinomies, with the idea of objective truth in the sense of correspondence to the facts, has been shown by the work of Alfred Tarski.) And we try to find this out, as well as we can, by examining or testing the assertion itself; either in a direct way, or by examining or testing its consequences.

(3) In connection with this examination, all kinds of arguments may be relevant. A typical procedure is to examine whether our theories are consistent with our observations. But we may also examine, for example, whether our historical sources are mutually and internally consistent.

(4) Quantitatively and qualitatively by far the most important source of our knowledge – apart from inborn knowledge – is tradition. Most things we know we have learnt by example, by being told, by reading books, by learning how to criticize, how to take and to accept criticism, how to respect truth.

(5) The fact that most of the sources of our knowledge are traditional condemns anti-traditionalism as futile. But this fact must not be held to support a traditionalist attitude: every bit of our traditional knowledge (and even our inborn knowledge) is open to critical examination and may be overthrown. Nevertheless, without tradition, knowledge would be impossible.

(6) Knowledge cannot start from nothing – from a *tabula rasa* – nor yet from observation. The advance of knowledge consists, mainly, in the modification of earlier knowledge. Although we may sometimes, for example in archaeology, advance through a chance observation, the significance of the discovery will usually depend upon its power to modify our earlier theories.

(7) Pessimistic and optimistic epistemologies are about equally mistaken. The pessimistic cave story of Plato is the true one, and not his optimistic story of *anamnēsis* (even though we should admit that all men, like all other animals, and even all plants, possess inborn knowledge). But although the world of appearances is indeed a world of mere shadows on the walls of our cave, we all constantly reach out beyond it; and although, as Democritus said, the truth is hidden in the deep, we can probe into the deep. There is no criterion of truth at our disposal, and this fact supports pessimism. But we do possess criteria which, if we are lucky, may allow us to recognize error and falsity. Clarity and distinctness are not criteria of truth, but such things as obscurity or confusion may indicate error. Similarly coherence cannot establish truth, but incoherence and inconsistency do establish falsehood. And, when they are recognized, our own errors provide the dim red lights which help us in groping our way out of the darkness of our cave.

(8) Neither observation nor reason is an authority. Intellectual intuition and imagination are most important, but they are not reliable: they may show us things very clearly, and yet they may mislead us. They are indispensable as the main sources of our theories; but most of our theories are false anyway. The most important function of observation and reasoning, and even of intuition and imagination, is to help us in the critical examination of those bold conjectures which are the means by which we probe into the unknown.

(9) Every solution of a problem raises new unsolved problems; the more so the deeper the original problem and the bolder its solution. The more we learn about the world, and the deeper our learning, the more conscious, specific, and articulate will be our knowledge of what we do not know, our knowledge of our ignorance. For this, indeed, is the main source of our ignorance

– the fact that our knowledge can only be finite, while our ignorance must necessarily be infinite.

We may get a glimpse of the vastness of our ignorance when we contemplate the vastness of the heavens: though the mere size of the universe is not the deepest cause of our ignorance, it is one of its causes. ‘Where I seem to differ from some of my friends’, F.P. Ramsey wrote in a charming passage, ‘is in attaching little importance to physical size. I don’t feel the least humble before the vastness of the heavens. The stars may be large but they cannot think or love; and these are qualities which impress me far more than size does. I take no credit for weighing nearly seventeen stone.’ I suspect that Ramsey’s friends would have agreed with him about the insignificance of sheer physical size; and I suspect that if they felt humble before the vastness of the heavens, this was because they saw in it a symbol of their ignorance.

I believe that it would be worth trying to learn something about the world even if in trying to do so we should merely learn that we do not know much. This state of learned ignorance might be a help in many of our troubles. It might be well for all of us to remember that, while differing widely in the various little bits we know, in our infinite ignorance we are all equal,

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There is a last question I wish to raise.

If only we look for it we can often find a true idea, worthy of being preserved, in a philosophical theory which must be rejected as false. Can we find an idea like this in one of the theories of the ultimate sources of our knowledge?

I believe we can; and I suggest that it is one of the two main ideas which underlie the doctrine that the source of all our knowledge is super-natural. The first of these ideas is false, I believe, while the second is true.

The first, the false idea, is that we must *justify* our knowledge, or our theories, by *positive* reasons, that is, by reasons capable of establishing them, or at least of making them highly probable; at any rate, by better reasons than that they have so far withstood criticism. This idea implies, I suggest, that we must appeal to some ultimate or authoritative source of true knowledge; which still

leaves open the character of that authority – whether it is human, like observation or reason, or super-human (and therefore super-natural).

The second idea – whose vital importance has been stressed by Russell – is that no man’s authority can establish truth by decree; that we should submit to truth; that truth is above human authority.

Taken together these two ideas almost immediately yield the conclusion that the sources from which our knowledge derives must be super-human; a conclusion which tends to encourage self-righteousness and the use of force against those who refuse to see the divine truth.

Some who rightly reject this conclusion do not, unhappily, reject the first idea – the belief in the existence of ultimate sources of knowledge. Instead they reject the second idea – the thesis that truth is above human authority. They thereby endanger the idea of the objectivity of knowledge, and of common standards of criticism or rationality.

What we should do, I suggest, is to give up the idea of ultimate sources of knowledge, and admit that all human knowledge is human: that it is mixed with our errors, our prejudices, our dreams, and our hopes: that all we can do is to grope for truth even though it be beyond our reach. We may admit that our groping is often inspired, but we must be on our guard against the belief, however deeply felt, that our inspiration carries any authority, divine or otherwise. If we thus admit that there is no authority beyond the reach of criticism to be found within the whole province of our knowledge, however far it may have penetrated into the unknown, then we can retain, without danger, the idea that truth is beyond human authority. And we must retain it. For without this idea there can be no objective standards of inquiry; no criticism of our conjectures; no groping for the unknown; no quest for knowledge.