

watch the watchers themselves?" John Adams said that we must have "a government of laws and not of men." Bureau administrators, trying to evaluate the morality of acts in the total system, are singularly liable to corruption, producing a government by men, not laws.

Prohibition is easy to legislate (though not necessarily to enforce); but how do we legislate temperance? Experience indicates that it can be accomplished best through the mediation of administrative law. We limit possibilities unnecessarily if we suppose that the sentiment of *Quis custodiet* denies us the use of administrative law. We should rather retain the phrase as a perpetual reminder of fearful dangers we cannot avoid. The great challenge facing us now is to invent the corrective feedbacks that are needed to keep custodians honest. We must find ways to legitimate the needed authority of both the custodians and the corrective feedbacks.

Freedom To Breed Is Intolerable

The tragedy of the commons is involved in population problems in another way. In a world governed solely by the principle of "dog eat dog"—if indeed there ever was such a world—how many children a family had would not be a matter of public concern. Parents who bred too exuberantly would leave fewer descendants, not more, because they would be unable to care adequately for their children. David Lack and others have found that such a negative feedback demonstrably controls the fecundity of birds (11). But men are not birds, and have not acted like them for millenniums, at least.

If each human family were dependent only on its own resources; if the children of improvident parents starved to death; if, thus, overbreeding brought its own "punishment" to the germ line—then there would be no public interest in controlling the breeding of families. But our society is deeply committed to the welfare state (12), and hence is confronted with another aspect of the tragedy of the commons.

In a welfare state, how shall we deal with the family, the religion, the race, or the class (or indeed any distinguishable and cohesive group) that adopts overbreeding as a policy to secure its own aggrandizement (13)? To couple the concept of freedom to breed with the belief that everyone born has an

equal right to the commons is to lock the world into a tragic course of action.

Unfortunately this is just the course of action that is being pursued by the United Nations. In late 1967, some 30 nations agreed to the following (14):

The Universal Declaration of Human Rights describes the family as the natural and fundamental unit of society. It follows that any choice and decision with regard to the size of the family must irrevocably rest with the family itself, and cannot be made by anyone else.

It is painful to have to deny categorically the validity of this right; denying it, one feels as uncomfortable as a resident of Salem, Massachusetts, who denied the reality of witches in the 17th century. At the present time, in liberal quarters, something like a taboo acts to inhibit criticism of the United Nations. There is a feeling that the United Nations is "our last and best hope," that we shouldn't find fault with it; we shouldn't play into the hands of the archconservatives. However, let us not forget what Robert Louis Stevenson said: "The truth that is suppressed by friends is the readiest weapon of the enemy." If we love the truth we must openly deny the validity of the Universal Declaration of Human Rights, even though it is promoted by the United Nations. We should also join with Kingsley Davis (15) in attempting to get Planned Parenthood-World Population to see the error of its ways in embracing the same tragic ideal.

Conscience Is Self-Eliminating

It is a mistake to think that we can control the breeding of mankind in the long run by an appeal to conscience. Charles Galton Darwin made this point when he spoke on the centennial of the publication of his grandfather's great book. The argument is straightforward and Darwinian.

People vary. Confronted with appeals to limit breeding, some people will undoubtedly respond to the plea more than others. Those who have more children will produce a larger fraction of the next generation than those with more susceptible consciences. The difference will be accentuated, generation by generation.

In C. G. Darwin's words: "It may well be that it would take hundreds of generations for the progenitive instinct to develop in this way, but if it should do so, nature would have taken her revenge, and the variety *Homo contra-*

ciens would become extinct and would be replaced by the variety *Homo progenitivus*" (16).

The argument assumes that conscience or the desire for children (no matter which) is hereditary—but hereditary only in the most general formal sense. The result will be the same whether the attitude is transmitted through germ cells, or exosomatically, to use A. J. Lotka's term. (If one denies the latter possibility as well as the former, then what's the point of education?) The argument has here been stated in the context of the population problem, but it applies equally well to any instance in which society appeals to an individual exploiting a commons to restrain himself for the general good—by means of his conscience. To make such an appeal is to set up a selective system that works toward the elimination of conscience from the race.

Pathogenic Effects of Conscience

The long-term disadvantage of an appeal to conscience should be enough to condemn it; but has serious short-term disadvantages as well. If we ask a man who is exploiting a commons to desist "in the name of conscience," what are we saying to him? What does he hear?—not only at the moment but also in the wee small hours of the night when, half asleep, he remembers not merely the words we used but also the nonverbal communication cues we gave him unawares? Sooner or later, consciously or subconsciously, he senses that he has received two communications, and that they are contradictory: (i) (intended communication) "If you don't do as we ask, we will openly condemn you for not acting like a responsible citizen"; (ii) (the unintended communication) "If you *do* behave as we ask, we will secretly condemn you for a simpleton who can be shamed into standing aside while the rest of us exploit the commons."

Everyman then is caught in what Bateson has called a "double bind." Bateson and his co-workers have made a plausible case for viewing the double bind as an important causative factor in the genesis of schizophrenia (17). The double bind may not always be so damaging, but it always endangers the mental health of anyone to whom it is applied. "A bad conscience," said Nietzsche, "is a kind of illness."

To conjure up a conscience in others

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That they do this is, indeed, part of that philosophic doctrine to which I have given the name 'essentialism'. According to essentialism (especially Aristotle's version of it) a definition is a statement of the inherent essence or nature of a thing. At the same time, it states the meaning of a word—of the name that designates the essence. (For example, Descartes, and also Kant, hold that the word 'body' designates something that is, essentially, extended.)

Moreover, Aristotle and all other essentialists held that *definitions are 'principles'*; that is to say, they yield primitive propositions (example: 'All bodies are extended') which cannot be derived from other propositions, and which form the basis, or are part of the basis, of every demonstration. They thus form the basis of every science. (Cf. my *Open Society*, especially notes 27 to 33 to chapter 11.) It should be noted that this particular tenet, though an important part of the essentialist creed, is free of any reference to 'essences'. This explains why it was accepted by some nominalistic opponents of essentialism such as Hobbes or, say, Schlick. (See the latter's *Erkenntnislehre*, 2nd edition, 1925, p. 62.)

I think we have now the means at our disposal by which we can explain the logic of the view that questions of origin may decide questions of factual truth. For if origins can determine the *true meaning* of a term or word, then they can determine the *true definition* of an important idea, and therefore some at least of the basic 'principles' which are descriptions of the essences or natures of things and which underlie our demonstrations and consequently our scientific knowledge. *So it will then appear that there are authoritative sources of our knowledge.*

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Pepper, K P

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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 parenthesis, that this argument is closely related to another—that all observation involves interpretation in the light of our theoretical knowledge,⁸ or that pure observational knowledge, unadulterated by theory, would, if at all possible, be utterly barren and futile.

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* (Book I, Part III, Section iv; Selby-Bigge, p. 83), 'that

⁸ See my *Logic of Scientific Discovery*, last paragraph of section 24, and new appendix *x, (2).

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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.' (See also *Enquiry*, Section x; Selby-Bigge, pp. 111 ff.)

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 to our memory or our senses' cannot have any bearing on this or on any other relevant problem of historiography.

XIV

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.

XV

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 (as I have tried to show in chapter 7 of my *Open Society*). 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



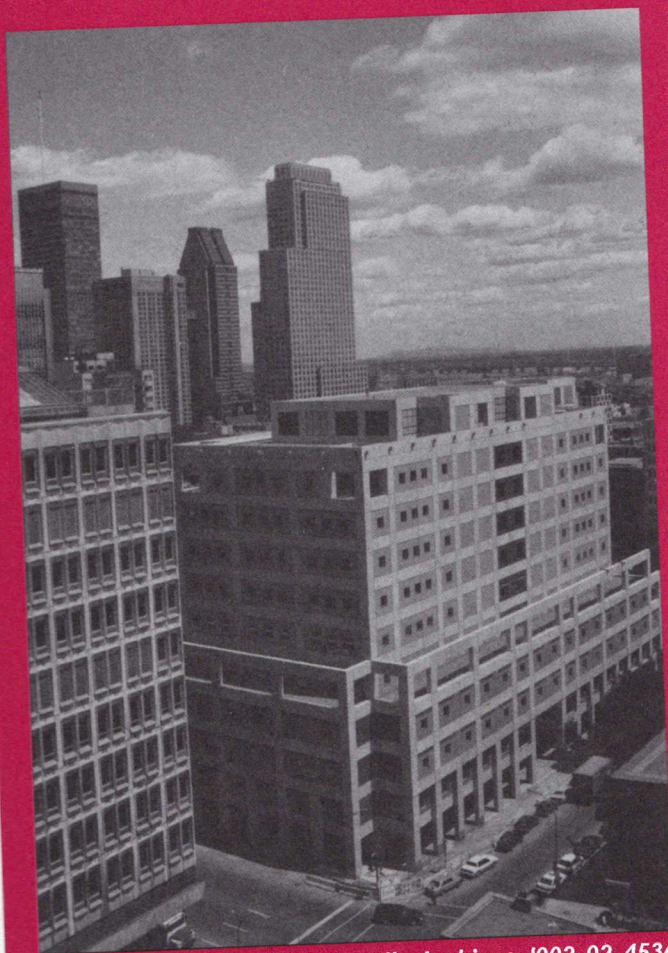
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