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## The Scientific Method and Economics

By E. C. HARWOOD

MAN IS different, fundamentally different from animal life. Man learns by experience and transmits that learning to his fellows and his offspring. Man has the capacity to open the doors of his mind, to let in the new ideas, to abandon the old and unserviceable ideas, to record his experience, and, by all these means, to turn time to his advantage. Unlike the animals, time has significance for man because man can command the experience of the past and use it in the present.

Thus we see that there is a vast gulf between man and the animals, a gulf in the sense of an apparently unbridged and unbridgeable gap. Man is like plant and animal life in that he is, like them, an energy binder; like the animals, man also is a space binder; but, unlike the other forms of life, only man is a *time binder*.

The ability to learn from experience and to teach future generations implies the ability to learn and to teach what is false as well as what is true. Man would not be a time binder if he could find only the correct answers, if some infallible instinct led him always to the truth.

But the question arises — what do we mean by knowledge? or, preferably, what is knowledge? . . . Apparently man has been able to acquire an extensive understanding of the relationships between events, and an ability to apply this understanding in the practical control of future events, without any general agreement on what knowledge is. Even today the philosophers cannot agree among themselves on any consistent usage of the word "knowledge." John Dewey and Arthur Bentley, in their *Knowing and the Known*, have this to offer about knowledge:

"In current employment this word is too wide and vague to be a name of anything in particular. The butterfly 'knows' how to mate, presumably without learning; the dog 'knows' its master through learning; man 'knows' through learning how to do an immense number of things in the way of arts or abilities; he also 'knows' physics and 'knows' mathematics; he knows that, what, and how. It should require only a moderate acquaintance with philosophical literature to observe that the vagueness and ambiguity of the word 'knowledge' accounts for a large number of the 'traditional problems' called the problem of knowledge."

Men can be said to know whatever their behaviors in specific environments indicate. The primitive medicine man may be said to know that his mumbo-jumbo and ritual will cure cholera just as you may be said to know that the services of a modern physician will be more effective. In both instances, what is known was learned, can be taught, and is reflected in pertinent action.

How, then, may we differentiate between the primitive medicine man's knowing and that which we should attribute to a modern scientist such as Bronislaw Malinowski? Is it merely the popular fashion to regard Malinowski's know-



ing more favorably? Are knowing and the known like women's hats, subject to extraordinary changes in fashion without apparent rhyme or reason? . . . Or is there some means of testing the various modes of knowing in order to ascertain their usefulness?

We now approach the most significant and exciting part of the adventure on which we have embarked. Man the time binder has at last discovered a means for testing his knowing. He has not discovered TRUTH in capital letters with which his knowing can be compared; he has not discovered a new deity whose disciples or earthly representatives can provide the infallible answers to man's questions; in short, man has found, not the goal for which he sought, but a road that seems to lead forward. Instead of the original goal of perfect and final knowing, which inevitably would have meant the end of all inquiry, man has found a broad highway leading on into the unforeseeable future. No final goal is in sight, but each step along the new road called the scientific method reveals new progress in knowing.

The scientific method refers to inquiry for the purpose of obtaining knowledge. This method involves the use of certain tools.

Logic, which is one of the tools, is the theory of inquiry. Like all useful theories, it has been developed by analyzing actual events, in this instance the actual conduct of inquiries. In the course of man's long search for knowledge, many inquiries have been successful, and many others have been unsuccessful. Study of both has made possible the formulation of general rules or guides, which constitute the developing theory of inquiry, or logic.

Mathematics, also a principal tool, is, in effect, a part of the logic tool for which a shorthand symbolization has been devised. Mathematics serves not only as a means of analyzing

the relationships between data already assembled but also as a means of suggesting possible relationships and therefore of directing the inquiry to new data or relationships not previously investigated.

The language tool is used as a means of describing the problem involved and of recording observations, hypotheses and their logical implications, findings and conclusions. When properly used, the language tool makes possible the construction of a word picture that correctly represents the steps in the inquiry (much as a map represents ground features) so that other qualified observers may verify the procedure by going over the ground covered and so that whoever is interested in the research may be informed regarding the results thereof.

The steps involved in application of the scientific method may be described as (1) awareness of a problem situation; (2) preparation of a tentative statement of the problem and its possible solution; that is, a tentative but partial hypothesis; (3) further observation, measuring, recording, and analysis of the pertinent facts or events; (4) refinement and possible reformulation of the hypothesis; (5) analysis of the logical implications of the hypothesis; (6) test or verification of the hypothesis by comparison of the logical implications based thereon with actual developments, which preferably are the results of carefully controlled experiments; and (7) publication of the data, findings, and conclusions in order that other qualified scientists may independently check and verify the results.

The scientific method is, and apparently always will be, in the process of development. Thus far in the history of mankind, this method is the only way of seeking for knowledge that (1) tends to result in agreement among qualified observers as to what may be classified as probable knowledge, (2) usually provides a basis for predictions, and (3) consistently, but not invariably, facilitates control of the actual course of events and thereby provides a solution of the problem.

We turn now to an aspect of this subject of more immediate interest. What about the application of this method to the science of economics? . . . Most of you, are interested in Henry George's writing in the field of economics. I shall assume that you are familiar with his volume *Progress and Poverty*. This is one of the great works of man, an enduring monument to the time-binding potentialities of our form of life. I am quite willing to accept John Dewey's evaluation of George in the words, "It would require less than the fingers of the two hands to enumerate those who, from Plato down, rank with Henry George among the world's social philosophers." I assume that John Dewey had in mind the criteria of the modern scientific method when he made this statement, and I know of no man better qualified than John Dewey to offer such an evaluation. (Continued on Page Three)

## The Scientific Method And Economics

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Henry George's great contribution to the scientific advance in the field of economics was his analysis of what may be called the civilization cycle. Although, as one who is trying to apply the modern methods of science, I must concede that any hypothesis is subject to amendment and improvement, I find it difficult to believe that future modifications of Henry George's principal thesis will alter its general nature.

Francis Neilson, as you may recall, wrote an interesting essay, "Henry George, the Scholar." In it he remarked, "... I am more and more impressed with the fact that George reveals in it [*Progress and Poverty*] not only a tenacity of purpose, but a thoroughness of review which covers all the known works of the chief economists who wrote in English during the eighteenth and nineteenth centuries."

And it was not only the writings of economists that George reviewed: he must have perused almost innumerable historical volumes and related social studies. It would be hard to find, I think, an author who had so thoroughly searched the accumulated results of man's time-binding efforts in an attempt to ascertain the facts involved in the great scope of his problem.

From time to time we at the Institute receive letters from Henry George enthusiasts, and this question is often asked: "Why, if you are convinced that George's work on the civilization cycle is of fundamental importance, do you not concentrate all your effort on teaching the economic theories he elucidated? why devote any attention to other economic problems?" Some enthusiasts even go so far as to urge, "Because certain economic maladjustments described by Henry George must be corrected if Western civilization is to survive, all other economic problems are of lesser importance and should be ignored until the fundamental maladjustment is corrected."

Our comment regarding such views is that they are not in accordance with the modern methods of science. Precisely why this is so perhaps can be explained most clearly by the use of a simple analogy.

A little more than 300 years ago William Harvey was experimenting on the circulation of blood in animals and men and the functioning of the heart, arteries, etc. His work stands out as one of the great landmarks of the scientific advance in the science of human health. Now we can imagine that Harvey's more enthusiastic disciples may well have been greatly impressed by the fundamental importance of this work. For all we know, many may have urged that all medical research be concentrated in this field. They might well have argued that the correction of maladjustments of the heart and circulation was vital to human health, that no man could survive if his heart failed or the circulation of his blood were impeded and that, therefore, all other health problems were relatively unimportant.

If the urgings of such enthusiasts had been heeded, the science of medicine might have developed differently. Bacteria might not yet have been discovered in all probability. If you were ill of a heart ailment, the doctors might know how to cure you, but you might die of pneumonia while they were curing your heart.

However, Henry George enthusiasts may question the validity of this analogy. Anal-

gies are sometimes misleading, of course. Few men have been more keenly aware of the danger of using analogies than Henry George himself; yet few men have ever used them more effectively. Is the analogy used valid in this instance?

The analogy used is pertinent because the economic activities of men do have other serious maladjustments than that so well analyzed by Henry George. For example, an economic system can be destroyed by inflation as completely and far more rapidly than economic systems have been destroyed by monopoly privilege. You today are living in an economic society that, if not actually being destroyed by inflation, is too near the precipice of a run-away inflation for the peace of mind of those who know where we are. For those who question whether inflation is as potent a destroyer of economic systems as pneumonia has been of men, Lenin's use of inflation during the Russian Revolution, the effects of inflation in destroying the stable middle class of Germany, thereby facilitating Hitler's rise to power, and the effects of inflation in France during the past three decades, should be enlightening.

Inflation happens to be especially important for another reason. In small doses, inflation can and frequently has made possible boom prosperity. At such times the inexorable operation of the economic laws analyzed by Henry George is temporarily concealed. Who will believe during such periods as the boom decade of the 1920's or the boom of the past five years that our civilization is doomed to self-destruction unless fundamental maladjustments are corrected? Inflation draws a veil over the facts of economic life so eloquently described by Henry George: And even worse, from the point of view of those interested in seeing George's basic remedy applied, during the depressions that follow each inflationary boom, far more desperate measures than those advocated by Henry George receive popular support. The experience of several nations indicates that adoption of the more desperate measures not only effectively blocks consideration of sound proposals but also inhibits the scientific approach to economic problems without which all hope for enlightened reforms must be abandoned.

Economics is but an infant science today. By far the most of the nation's economists lack even the elementary mathematics and language tools essential for any social scientists. The Social Science Research Council, in its report "The Recruitment, Selection, and Training of Social Scientists," has pointed out some of the major deficiencies in the current training of social scientists. For example, "Verbal facility, rather than a scientific attitude and mastery of scientific principles and techniques, is too generally the criterion of achievement," and, "To attempt to turn more mathematically illiterate scholars into fields already overcrowded with intellects of similar constitution does not appear to be a profitable venture."

You who are interested in Henry George's work may often have wondered why his ideas have not gained wider acceptance in academic circles. Some see sinister forces at work intimidating the academic minds, but I think a simple explanation is available. As the Social Science Research Council has indirectly pointed out, most economists lack the training that would enable them to judge the quality of scientific work when they see it; they have no recourse but to continue parroting the accepted authorities of their student days.

Colonel E. C. Harwood, director of the American Institute for Economic Research, Great Barrington, Massachusetts, is the new "voice in the wilderness" of economics.

In search of a non-self-contradictory theory, his economic studies led to his appreciation of Henry George's books, which he first read a quarter of a century ago when on duty in Hawaii.

These economic principles, he felt, were the only ones which could stand under the severe scrutiny of the scientific method, or of logic, the theory of inquiry, as it has been so well described by John Dewey, who is the honorary president of the Henry George School of Social Science.

This method does not pretend to reach a final goal, but expects always to push on into the unknown. Specific features of the scientific method are stated here in an excerpt from an address by Colonel Harwood at the New York school in February.

Publications from Great Barrington are already well known. The Institute has as one of its primary aims the training of economists for scientific research.

We at the Institute therefore have concluded that attention should be concentrated on the training of economic scientists. We regard an understanding of Henry George's work as essential for an economist as is an understanding of William Harvey's work to every physician. But the vitally important thing, as we see it, is to develop economic scientists.

To those who like their economics according to Henry George, I would bring one message. I quote in part from *Progress and Poverty*: "Only in broken gleams and partial light has the sun of Liberty yet beamed upon men, but all progress has she called forth . . . She is to virtue what light is to color; to wealth what sunshine is to grain; to knowledge what eyes are to sight. She is the genius of invention . . . Where Liberty rises, there knowledge expands, invention multiplies human powers, and in strength and spirit the freer nation rises among her neighbors . . . Liberty calls to us again. We must follow her further: we must trust her fully."

And how, I now ask you, shall we follow Liberty, how find the way? Is there anyone here so naive that he thinks the road is short, that the door is wide open, and that someone already knows the way? If so, just look again at the time-binding efforts of man. Isn't the verdict of all history as plain as a pike staff? Isn't it that the road is long and difficult to follow, that no man has as yet been able to demonstrate that he knows the way?

But it is not all darkness ahead. The light of liberty has enabled the plodding feet of men to find a road to progress. Better yet, however, it has enabled men to devise a means of tracing that road into the future. That means is the scientific method, which in itself is a developing or evolving means of conducting successful inquiry.

This, if you will but look closely, you will see is the crowning achievement of man the time binder. At long last, after dark centuries extending much further back than we can see, man has found not his goal, not even a sure and easy route to his goal, but the road of reasonably assured progress in the future.