

The Falseface of Science

by ALBERT H. HOBBS

"When I use a word," Humpty-Dumpty said, "it means just what I choose it to mean—neither more nor less."

"The question is," said Alice, "whether you *can* make words mean so many different things."

"The question is," said Humpty-Dumpty, "which is to be master—that's all."

AN ADVERTISEMENT in *The New York Times* recently informed us that a book called *Human Behavior* contained scientific answers to questions such as what causes divorce, how extensive is sexual activity, how effective is psychotherapy, and altogether provided 1,045 such conclusions about human behavior in "An Inventory of Scientific Findings."

Acclaimed as "unprecedented" and "monumental," this book was widely and favorably reviewed thus leading many people, I suppose, to believe that it actually does contain hundreds of scientific answers about human behavior. If it were subtitled "A Collection of Beliefs about Human Behavior," it would be acceptable as an incomplete but useful academic reference. But this miscellany, this assortment, this hotch-potch is hardly a proper book at all, and it is not offered to us merely as an interesting collection of beliefs but as "An Inventory of Scientific Findings," and "scientific" is the word on which it and its 1,045 conclusions stand or fall.

Here in America we make a fetish of science, or as Anthony Standen put it, we make a sacred cow of science. In several books I have described our idolatry of this modern Golden Calf and so, in recent years, have numerous others right down to the

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latest (September 11, 1964) issue of the journal *Science* in which we are warned that though the idea of a value-free science is "absurd" it is commonly held here in a society which worships science and has all but "canonized" scientists.

I

SCIENCE, the Humpty-Dumpty word in question, means in its root-sense simply "to know," but since most of the things we know (our name, our street address, our height and weight and numerous other discrete items) are clearly not at all scientific, it then becomes not the root-sense of the word but its connotation which is important.

Most Americans seem to believe that science connotes a procedure which infallibly leads to answers which are true—permanently true—and entirely devoid of prejudice; answers which once arrived at must be accepted, not further argued. But to reach such objective seeming-truths, a specific procedure, now to be described, must be followed.

Controlled Observation: Each item of data in a scientific study must be transformed into a variable which every competent person, no matter what his bias, accepts. Such agreement can be attained only when all the data have been reduced to quantitative, uniform, stable, and divisible units. Thus the subject matter of science is found in the measurement of weights, distances, pressures, velocities and other quantitative units which can be recorded on speedometers, altimeters, scales, gauges and similar instruments.

The sentiments and emotions which are significant to us as persons and important in our relations with each other have never been reduced to quantitative, uniform, divisible and stable units and hence are quite unsuitable to scientific investigation.

Hypotheses also constitute an integral element in the indivisible—it is false to believe that one can be *partly* scientific—code of scientific procedure.

The collection and the statistical manipulation of facts alone has little meaning unless the data are carefully contained within an hypothesis which can be tested. Hypotheses should be explicitly stated so that other investigators, critical of the findings, can also test them. They should be so described that it is not possible to derive contradictory conclusions from the same data. They should be so formulated that it is possible, through controlled observation, to prove them wrong.

Most of the conclusions described in *Human Behavior* involve facts without hypotheses or are based on hypotheses (such as the assumptions of psychoanalysis) which cannot be verified by controlled observation, in neither case meeting the standards and tests which are necessary to reach a valid scientific conclusion.

Verification is the crux of scientific procedure, and one of the more common tests of it is prediction. Unless predictions can be made, unless they are consistently accurate, and unless their accuracy is based on a stated invariable relationship between natural phenomena, the hypothesis is suspect. Prominent among the areas in which social scientists have attempted predictions are economic trends, opinion polls, and population forecasts. In all of these areas the results have been repeatedly and grossly wrong, and in no case are they based on immutable relations between natural phenomena. Professor Jacques Barzun recently affirmed what I have long maintained:

The social sciences today have yet to show one universal element or controlling "law," one unit of measurement, one exactly plotted universal variable, or one invariant relation.

EVEN when all of these necessary steps are followed and other safeguards are employed to assure objectivity in the results there is no guarantee that the scientific conclusion is true in any but a temporary and special sense, as was recently and amusingly pointed up by Dr. Alexander Calandra in *Current Science* and reported in *The New York Times* (3/8/64).

To show that we make a fetish of "proper scientific procedure" and use it even though other methods may be better, Dr. Calandra told of a student who took an examination in a course in physics. One question was: "Show how it is possible to determine the height of a tall building with the aid of a

barometer." Instead of giving the wanted answer, to be derived from a formula which related atmospheric pressure to altitude, the student gave a simpler but more accurate answer: "I would," he said, "take the barometer to the top of the building, attach a long rope to it, lower the barometer to the street, and then bring it up, measuring the length of the rope. The length of the rope is the height of the building." When he received a zero for this correct but not wanted answer, the student went on to show that the height of the building could be ascertained, also, in other ways, all more accurate than the "scientifically correct" way. He told how one could drop the barometer from the top of the building and by timing its fall with a stopwatch determine the height of the building by applying the law of falling bodies; or one could measure the length of the barometer, measure the length of its shadow and the length of the shadow of the building and by a use of simple geometric proportions determine the height of the building. His best answer, simplest and most nearly accurate, ignored scientific procedure entirely. He said he would ". . . take the barometer to the basement and knock on the superintendent's door. When he answers say 'Here, I have a very fine barometer. If you will tell me the height of this building, I will give you this barometer.'"

Scientific procedure, undoubtedly the finest technique to reach conclusions about some kinds of problems, cannot be applied blindly and automatically to all problems. However excellent, it must be used with imagination and discrimination, and even at its very best its findings are limited, as the astrophysicist, Sir Arthur Eddington, illustrates in his analogy which compares scientific procedure to the use of a net to catch fish.

Eddington's scientific (ichthyologist) fisherman concludes from his net-catching studies that no creature of the sea is less than two inches long. To those who object that there are, indeed, many sea-creatures under two inches but that they can't be caught in the scientist's net the ichthyologist says: "What my net can't catch isn't fish," and he scornfully accuses his critics of having non-scientific, metaphysical beliefs, and he is correct; but so are his critics. The dispute arises because critics of the scientist are talking about reality—in this case an objective kingdom of fishes—while the ich-

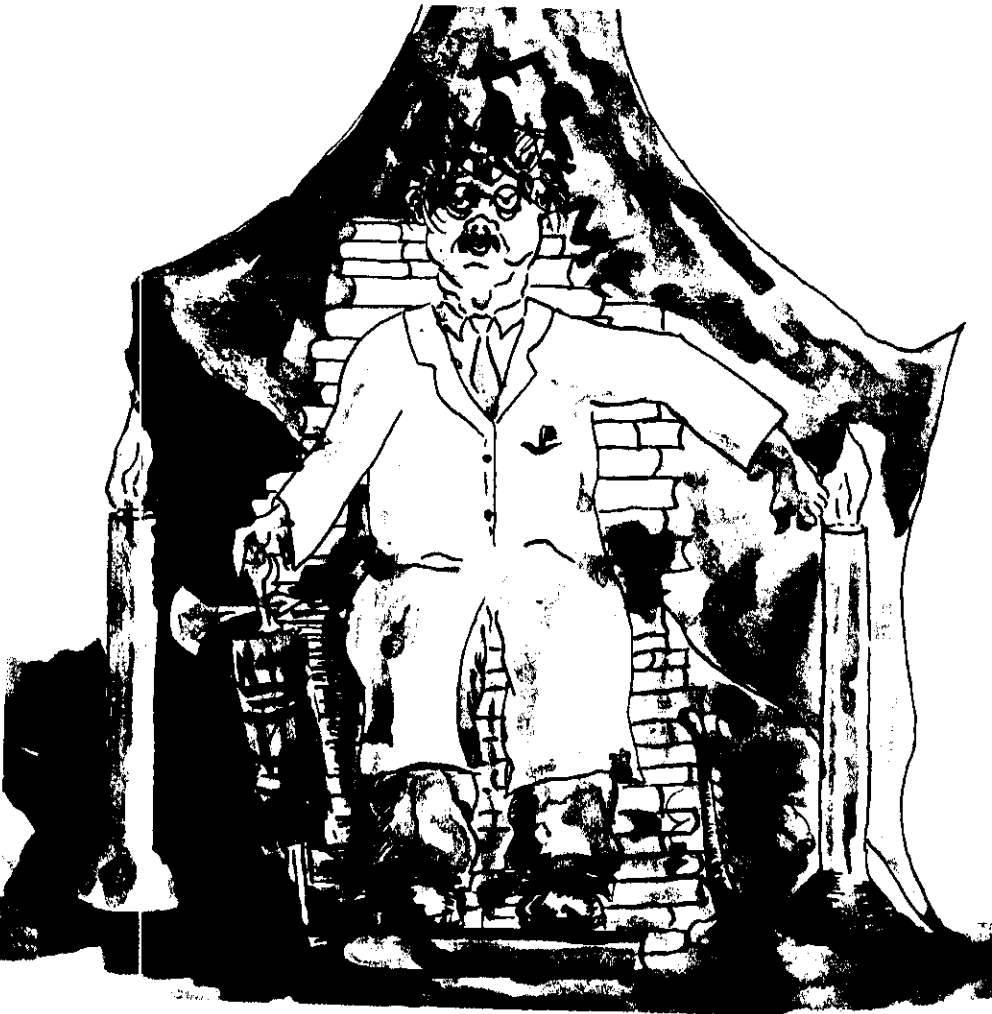
thyologist is talking about the only thing he, as a scientist, can talk about—his carefully studied precise fish-world which is limited entirely to those catchable in his net. His findings are true, but true only for the measurable aspects of catchable fish, and Eddington concludes his analogy by having a layman critic of ichthyological science mutter

I bet he does not get very far with his ichthyology of catchable fish. I wonder what his theory of the reproduction of catchable fish will be like. It is all very well to dismiss baby fishes as metaphysical speculation; but they seem to me to come into the problem.

A striking example of this net-catching fishy world can be found in the conclusions about human sex in the highly lauded "scientific" studies published by the late Professor A. C. Kinsey. Kinsey limited his analysis to the sexual orgasm and (though

his procedure was a parody of scientific investigation rather than an example of it) even if he had been able to reach scientific conclusions about sexual orgasms these would not be, in any but a limited and misleading sense, truths about human sexuality. His orgasmic net could not catch sentiment, love, romance, the joy of sharing in the responsibilities of parenthood and other aspects of human sexuality which are socially and psychically more important than the physiological orgasm. As with Eddington's ichthyologist, Kinsey's findings, even were they scientific, would make the relation between sex and having a baby nothing but sheer metaphysical speculation.

Since the psychically and socially significant aspects of our lives are qualitative rather than quantitative, the technique of controlled observation cannot be used to collect data about them, to verify hypotheses or to rebut them. Predictions cannot be



made from the conclusions we reach and the supposed scientific techniques which are used to study these things are actually those of false science; scientism rather than science. There are many ways to make people believe that conclusions are scientific when they are not, ways which I described in *Social Problems and Scientism*, but here just one example, the use of a soft definition of science, will be given.

II

SOFT definitions of science are widely used in books which pretend to contain scientific conclusions about personal and social problems. One prominent sociology textbook, for instance, holds that a scientific conclusion can be reached merely by (1) gaining knowledge through one of your senses, (2) relating such knowledge to other facts, and (3) finding someone else who agrees with your conclusion. Anytime, therefore, that you stick out your hand and feel water drop on it and thence conclude it to be raining and confirm with someone else your supposition that if you stand out in the rain you'll get wet, you have, according to the authors of this sociology textbook, reached a scientific conclusion. According to such a soft definition of science, anyone who knows enough to come in out of the rain is a scientist!

There is no law which requires that everyone must use a rigorous, rather than a soft definition of science, but it is apparent that unless the term is described with a fairly high degree of intellectual rigor, its meaning will soon vanish. One should especially limit the use of the term when people might apply the "scientific" conclusions, believing them to be as true as Newton's laws of motion, to their own lives. A good standard, it seems to me, is to use the term "scientific" only if you are prepared to have others use it similarly to reach conclusions which you dislike. Many people, for example, contend that science has proved that no significant differences exist between the intelligence of negroes and whites. To say that such a finding is a scientific conclusion requires you to accept a very broad meaning of scientific procedure, so broad that the racist findings of the Nazis, though opposite to yours, would also have to be accepted as scientific. It is better, I believe, to recognize that neither conclusion is scientific

and to base our relations with others upon ethical principles rather than on pseudo-science.

What is the meaning, Alice next asks, of the term Behavioral Science which is applied to the 1,045 supposedly scientific findings in *Human Behavior*? According to Professor James G. Miller who participated in the 1949 discussions which resulted in the birth of this term

We adopted this phrase, first, because its neutral character made it acceptable to both social and biological scientists and, second, because we foresaw a possibility of someday seeking to obtain financial support from persons who might confound social science with socialism.

So the designation "behavioral science" is a neutral one and its connotations relate more closely to the grubby task of money-raising than to a selfless search for truth.

Modern behavioral science in which, according to Professor Miller, "All behavior can be conceived of as energy exchange within an open system or from one such system to another," is not modern at all, going back at least as far as Descartes who in 1619 made virtually the same claim. Descartes could never verify this strange notion nor can anyone else down to and including Prof. Miller. If they could scientifically verify this behaviorist myth they would arrive at a view of man such as that propounded in 1913 by the psychologist J. B. Watson: "The behaviorist, in his efforts to get a unitary scheme of animal response, recognizes no dividing line between man and brute." This same behavioral belief is now propounded with great effect by Harvard's Professor B. F. Skinner who avows that: "The hypothesis that man is not free is essential to the application of scientific method to the study of human behavior."

IS THIS the "scientific" net you want to be caught in?

Actually, the authors of *Human Behavior* make no serious effort to limit their findings to those reached by hypotheses which have been proved or disproved by controlled observation in order to arrive at predictability based on immutable relations between natural phenomena. Rather, they are content to base their "scientific" findings on: (pp. 5-6)

... some "hard" evidence for the finding, typically of a quantitative character, beyond simply an idea, a concept, a hypothesis, an insight, or a case history. As a general rule we have tried to include the best-supported findings within each field, those we think most likely to be considered as established by a consensus of the professionals, and those where the behavioral sciences have made a distinctive contribution.

If "a consensus of professionals" were the basis for determining scientific validity we would still refuse to accept the findings of those iconoclastic upstarts Kepler, Galileo, Newton and Planck. Scientific validity is not decided by vote. What the authors offer as their best example of scientific procedure and describe as (pp. 20-21) a classic experiment in which the "logic has no loophole" is only a loose generalization based on terms related to mental illness which have never been clearly defined and upon categories which, according to the outstanding authority in the field, Karl Menninger, may not even exist.

If these 1,045 findings are not, in any rigorous sense, scientific what are they? Mostly they fall into two categories: commonplaces about behavior, and findings from selected studies in which bias in the selection makes for a partial and, I would say, distorted view of man.

Before analyzing *Human Behavior* I loaned it to two professional friends whose judgment I respect. Both agreed, independently of each other and of me that most of the findings, while containing aspects of truth, are little more than pedantic elaborations of the obvious. To say that (p. 82, scientific finding C30) "Every known society differentiates among several age groups and assigns certain appropriate behaviors to them" is little more than saying that most tribal chiefs are not children nor infants heads of households. It is nice to know (p. 193, scientific finding B16) that "Neither the formation nor the application of a concept requires conscious recognition of the common elements or relationships involved in the specific instances," but to say this only affirms that you need not know how to do calculus in order to ride a merry-go-round. Likewise (p. 198, scientific finding B20) to find that "The growing child attains concepts in order of increasing abstractness and complexity" is only to discover that kids learn to add before they learn differential equations.

III

IN ADDITION to a sometimes interesting collection of commonplaces the authors of *Human Behavior* give us a biased as well as an incomplete portrait of man. Mostly, the slanting in their portrayal of man arises out of the nature of their behavioristic approach, and authors Berelson and Steiner admit to some of these limitations and apologise for them but they also inexcusably ignore a great amount of significant and solid (though not scientific) evidence for hereditary differences, thus supporting their environmental deterministic bias. They also give much more credence to psychoanalytic beliefs than the evidence warrants. Such slanting may not be intentional, though, because one needs no technical instrument to plumb the depths of their knowledge.

This environmental deterministic bias was recently admitted in a publication of the Social Science Research Council, a powerful organization which itself has done much to propagandize this prejudice

... few would question that in the past the predominant values of American social scientists have strongly emphasized plasticity of behavior, social amelioration, and the overriding importance of environmental variation as a determinant of behavior. What, you may wonder, is the significance—other than technical and academic—of bias such as admitted in this publication of the SSRC and which permeates all of the disciplines which now huddle under the rubric Behavioral Sciences. For one thing, to hide persistent bias under the skirts of science might sully the reputation for purity which she now enjoys and prostitute her; for another, to label slanted material scientific tends to transform education into deceptive indoctrination.

THE practical danger of this pseudo-scientific approach is incalculable, but certainly extensive. Ambassador Robert Murphy in his recent *Diplomat Among Warriors* attributes much of our post-World War II cold war trouble to a weakening of our armed forces brought about by "head-long demobilization." Most people do not know, and those who do know now keep quiet about the fact that social scientists' irresponsibly provided the formula (The Point System) which was the key factor in this reckless dissipation of our military strength. Thus social science was instrumental in creating the power vacuum that Rus-

sian and Chinese Communists were quick to exploit. Today similar social scientists, similarly irresponsible, play a large, in many respects decisive, and possibly disastrous part in our military planning, as Admiral Hyman G. Rickover (NYT, 4/17/64), Hanson Baldwin (NYT, 4/2/64) and others have warned.

Over 8,000 social scientists are already employed by the Federal Government and their number is increasing rapidly. In 1962 (*Science*, 4/20/62) the President of these United States endorsed a report by a behavioral science subcommittee (sub to the President's Science Advisory Committee) which advocated that we apply this pseudo-science wholesale in our national affairs. Prof. Jerome B. Wiesner, the late President Kennedy's Special Assistant for Science and Technology, boldened by this endorsement of his report, went on to recommend that behavioral scientists be converted into social systems engineers to work out a program for our entire national development.

Behavioral science is clearly not science in any meaningful sense of the word but the question of the meaning of words is rapidly transforming itself, as Humpty-Dumpty said it would, into the basic issue ". . . which is to be master." If the influence of this false science continues to grow, 1984 is tomorrow.

What kind of man do Authors Berelson and Steiner catch in their pseudo-scientific net? They admit (p. 662) that the nature of man is ". . . a Big Question . . . the most fundamental question of all," and here is their portrayal of behavioral science man

Our man seeks virtue through reason far less than he seeks approval through the people around him; his evil comes from frustration, not from inherent nature; he is less concerned with the exercise of power than with his relations with those who are powerful, and he has learned ways to limit the power they seek to exercise over him; he seeks acceptance and the good view of the community more than he seeks political power or economic riches, and he can even control his strongest instincts, the libidinous side of his nature, to this end.

Behavioral science man is not new, really, nor did he need behavioral science to create him, but its influence helps him to multiply. This man, the mirror of those around him, lacking character and virtually devoid of substance, was described many years ago by

sociologist Charles Horton Cooley as "The Looking-Glass Self," a description later copied and awkwardly translated by Prof. David Reisman into the "Other-directed Personality." He is T. S. Eliot's Hollow Man who will die with a whimper. He is Herman Melville's

Man disennobled — brutalized
By popular science — atheized
Into a smatterer.

Believing that science has proved him to be as it describes him and glad for its respectable excuse which absolves him of responsibility and guilt, man commonly accepts this portrayal at its face-value and, as Professor Taylor tells us in his history of science

Man is behaving like a cunning brute because he has convinced himself that science has proved that he is no more than that. Let the nature of scientific reasoning and evidence be understood; and its conclusions be applied to the material realm to which alone they are relevant; then the peculiar eminence of man and the excellence of the good of which he is capable will be once more apparent.

If we do not thus limit science to its proper sphere and eschew the scientism of behavioral science from our minds then we must create more and more personality masks to cover less and less character, trying vainly to disguise our hollow selves behind this falseface of science.

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