SCIENCE - THEORY AND FACT

Abdul Haq Malik
Department of Social Sciences & Humanities,
University of Agriculture, Faisalabad.

Science is popularly defined as an accumulation of systematic knowledge. Such a definition is adequate only to the extent that the words "systematic" and "knowledge" are themselves properly defined. Logical argument or systematic theology might otherwise be equated with natural science. It is, therefore, necessary to elaborate upon the hidden contents of these terms before the phrase can stand as a definition of science.

Science is a method of approach to the entire empirical world i.e. to the world which is susceptible to experience by man. It is merely a mode of analysis that permits the scientist to state his propositions by interweaving 'if-' with 'then-'. Thus, no matter how systematic a body of knowledge is, it is not science if it merely begins with axioms or 'self-evident' propositions and ends with education from those axioms. The sole purpose of science is to understand the world in which man lives. The meaning of empirical world is, however, complex and requires considerable explanation.

Modern science is fundamentally an intricate relation between theory and fact which is more obscure than illuminative in understanding. Theory is confused with speculation and thus it remains speculation until it is proved. When this proof is made, theory becomes fact. Facts are thought to be self-evident, definite, certain and without question. Theory i.e. speculation is supposed to be the realm of philosophers. Scientific theory, therefore, is thought to be merely the summation of facts on a given subject. Even this function seems to be restricted one since facts speak for themselves. The scientists who are engaged in research observations are very much concerned with both theory and fact. They are clear that theory and fact are not diametrically opposed, but inextricably intertwined; and that theory is not speculation.

Obviously, the way the scientist views theory and fact is indeed quite different from the popular conception. An observatory result is regarded as a reproducible fact and an empirically verifiable observation. To a scientist, theory refers to the relationships between facts or to the ordering of them in some meaningful way.

It can, therefore, be said that the facts of science are the product of observations that are not random but meaningfully gathered and theoretically or empirically presented. Thus we cannot think of facts and theory as being opposed.

Theory is a functional tool of science which:

i. defines the major orientation of a science by defining kinds of data which are to be abstracted;
ii. offers a conceptual scheme by which the relevant phenomena are systematized, classified and interrelated;
iii. summarizes facts into: (a) empirical generalization and (b) systems of generalization;
iv. predicts facts; and
v. points to gaps in our knowledge.

Facts are productive of theory in the ways that they:

i. help to initiate theories;
ii. lead to clarify and modify the existing theory;

iii. cause the rejection of theories failure to factual supports; and
iv. change the focus and orientation of theory.

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