CURRENT ISSUES IN PHILOSOPHY OF SCIENCE:
IMPLICATION FOR THE STUDY OF MARKETING

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ABSTRACT

In this paper we suggest that the dominant meta perspective in marketing "logical empiricism," may in some special sense be obsolete and dysfunctional. The position we take is not that this view should be abandoned, but that a more eclectic approach is of greater value. This requires an understanding of the limits of logical empiricism. Three particular issues focusing on these limits are addressed: metamethod, reality construction, and falsification.

INTRODUCTION

The dominant meta perspective in marketing might best be described by the expression "logical empiricism." This view, as manifested in marketing, holds that knowledge derives from experience expressible in propositional logic (including mathematics) which can be tested by observation and experimentation. The central tenets of this view include the ideas that: (1) concepts (theory) must be connected with observation by logical operations; (2) explanation and prediction are basically the same and thus all propositions should be testable; and (3) the primary focus of scientific effort should be placed on the testing of hypotheses (justification) rather than their discovery. Many of these views or their variations and other logical empiricist views in marketing are developed extensively in Zaltman, Pinson, and Angelmar (1973) and Hunt (1977). These views also pervade the published research literature as unspoken assumptions.

In this paper we suggest that the dominant view in marketing may in some special sense be obsolete and dysfunctional. It may be obsolete in that extant criticisms of logical empiricism are sufficiently compelling that many philosophers of science have abandoned most elements of this viewpoint as have many scientists in the social and natural sciences (Suppe 1977; Caldwell 1980; Fussfeld 1980). The fact that scholars in other traditions have moved away from a viewpoint still dominant in marketing is not in itself cause to change. It is, however, sufficient reason to critically reexamine this viewpoint. In fact, such reexaminations are beginning to surface in marketing (cf: Olson 1981; Peter 1981; Zaltman, LeMasters, and Neffting 1982; Ingebretsen 1981; Anderson 1981). The viewpoint may also be dysfunctional in that it tends to limit the areas of inquiry as well as methods of inquiry in marketing and hence it unintentionally restricts our knowledge about marketing phenomena.

The position we take here is not that logical empiricist views should be abandoned totally but rather that a more eclectic approach is of greater value. This requires an understanding of some of the limits of logical empiricism and an understanding of other views as well. In this paper, we shall address three particular issues: metamethod, reality construction, and falsification.

METAMETHOD

Explicit debates about method at a meta level are uncommon in marketing. Disputes tend to focus on the relative merits and roles of: laboratory experiments versus field experiences; causal modeling versus explained variance approaches; the validity of convenience samples versus samples selected in other ways, and so on. Little attention is given to such larger issues as confirmation vs. falsification, the separation of context of justification and discovery, the concept of reality construction, operationalism, the notion of viewing phenomena as habits rather than as laws, and so on. These larger issues are considered to be "settled" in the field of marketing. Consequently, controversy tends to focus on whether a particular methodology was implemented properly and to a lesser degree on whether a given methodology was the most appropriate one given the nature of a problem. These are important— even essential— kinds of controversies. They are particularly meaningful when the larger issues actually are settled. The good news is that these larger issues are most emphatically not settled. In fact, the resolutions that are emerging elsewhere contradict prevailing beliefs about science held by many in the marketing profession.

Why is this good news? For one thing, these contradictions may moderate the present tendency to move away from issues of substantive significance or enlightenment. This tendency is causing us to learn "more and more about less and less (Coser 1975)." We may gain precision at the cost of important insights. As Blalock notes, "I do not believe we can simultaneously achieve generality, accuracy, and simplicity. Therefore, we must give up one or another of these desirable characteristics (Blalock 1979)."

We cannot in fact maximize precision, generality and realism all at the same time (McGrath 1981). If we maximize precision, for example, we achieve low levels of generality and realism. If we optimize on any two criteria, we minimize the third. When might it be best to maximize on one criterion or suboptimize on another, or optimize on two criteria and minimize on a third? This type of methodological dilemma needs to be discussed in more depth at least as much as debates about the precision of measurement techniques, or the realism of laboratory experimentation, or the generalizability of particular sampling plans.

We often use the methodology of the natural sciences as a metaphor or model of appropriate methodology in marketing (or in social sciences generally). The idea that we should strive to be like the natural sciences is a charming notion. It is also a bit quaint, based as it is on an inaccurate notion of how natural scientists do their science. It is predicated on what is believed about science in areas of science which are least relevant as a source of metaphor for marketing. For example, the way marketing research textbooks address experimentation mirrors what one finds in textbooks dealing with Newtonian physics. However, marketing more closely resembles the phenomena of quantum mechanics (if it has to resemble anything), which is the study of the movement of quantities in the subatomic realm. (This idea has also been expressed recently by Ingebretsen and Peterson 1981.) In this realm, Newtonian physics doesn't work. Part of the parallel between quantum mechanics and marketing lies in the fact that much of what we deal with in marketing is inherently unobservable and that the method of observation influences the object of observation—the effort to observe reality changes it. (See Zukow 1979; Weisakopf 1979.)
A reexamination of basic philosophical assumptions held in marketing might lead some researchers into areas and modes of inquiry which demand substantive intellectual rigor, even if this intellectual rigor comes at the cost of conventional technical rigor. Such a shifting of intellectual resources could dramatically and beneficially alter the knowledge foundations of marketing. One of the most eminent methodologists in the social sciences today, Donald T. Campbell, cautions:

"Too often, quantitative social scientists, under the influence of missionarism from logical positivism, presume that in true science, quantitative knowing replaces qualitative, common-sense knowing. That situation is in fact quite different. Rather, science depends upon qualitative, commonsense knowing even though at best it goes beyond it (Campbell 1979, pp. 69-70)."

It should be stated clearly before proceeding further that the need now for much more eclectic approaches does not mean logical empiricism has not been fruitful. The prevailing paradigm has been associated with—in fact, it has been conductive to—substantial intellectual progress in marketing. However, a kind of diminishing returns may now exist with respect to the kinds of phenomena where that paradigm is appropriately applied. In the next two sections two related metamethod issues are discussed as examples of concerns which would move us more into areas of increasing returns. The two issues concern the social construction of reality and the idea of falsification. The positions expressed in this paper are somewhat at variance with those commonly found in marketing.

THE SOCIAL CONSTRUCTION OF REALITY

Most of us are accepting of a notion of objective reality. We take for granted that there exists an objective reality waiting to be discovered, and we assume that our processes of discovery will lead to an objective understanding of that reality. Our efforts at discovery yield what we call "knowledge," and we believe that knowledge is synonymous with understanding; we believe that knowledge can reflect a clear perception of truth. But what is knowledge? If knowledge is a certainty that phenomena are real, and if certainty results as a product of the process of discovery, and if the process of discovery involves human thought and understanding, then it is clear that knowledge must be a product of human thought. Human thought, in turn, relies on perception and reasoning; thus, concepts only become meaningful in so far as we can secure them to a perceptual context (Turner 1967). Knowledge, then, must always be knowledge from a certain position (Berger and Luckman 1966).

To explore human thought, and thus to explore knowledge, we must recognize the interrelationship between human thought and the social context within which it occurs. To do this is to study the sociology of knowledge, or the social construction of reality.

Concern for the social construction of reality is important since it draws attention to the process by which people make sense of their observations. The philosophies of Hume, Locke, and Berkeley argue that the process of discovery is a perceptual process. They argue that the source of all ideas is perception and that all formulations of the existence of a thing might be in terms of ideas which derive from experience (Turner 1967). Thus, the world as we know it must be a world of ideas and not of independent essences (Turner 1967); reality as we know it must be subjective.

A subjective reality does not merely exist, it must be created. Subjective reality does not need to be discovered, it needs to be constructed. We assume that there is an underlying order to things when, in fact, it is precisely the assumption of orderliness that allows us to create order.

Philosophers like Kuhn, Feyerabend and Hanson argue that all science proceeds from 'one's' world view and, therefore, one's knowledge and beliefs may influence which facts one is able to determine operationally (Heinemann 1981). This argument emphasizes that theories are constructed by humans, and that our facts depend on the particular way we ask our questions and on the assumptions (often unarticulated) that lie behind our choice of methods (Wachtel 1980). We rarely question the validity of our own sense data (Fishbein and Ajzen 1975), thus, we have a tendency to naively believe that the world is as it appears.

It is important, however, to understand that observation is theory dependent. The particular sort of data that a researcher finds reasonable to collect in any given situation is not determined by the problem under study, but by a tentative answer to it that the investigator entertains in the form of a conjecture or hypothesis. "Facts" or empirical findings, therefore, are only relevant in reference to a given hypothesis, but not in reference to a given problem (Hempel 1966). What, then, does it mean to say that we now understand "why...?" Note that the long-lived or "accepted" theories have the characteristic of containing a number of general notions and principles which make sense of the observed regularities, and in terms of which they all hang together. Consequently, in 1961 the rate of acceptance of these theories continue to make sense of empirical findings, they will continue to be viable views of the world's phenomena. When (and if) these theories eventually exhaust their capability of adequately explaining observed relationships, they will be subject to change or replacement by a new theory. This new theory, in turn, may again change the sort of data that a researcher finds reasonable to collect in any given situation.

The underlying assumption of the orderliness of phenomena extends to the "condition" of being human as well. Naive psychologies generally include this notion of a consistent or orderly world. Scientists—radical as this notion may seem—are human and are subject to the same sorts of cognitive processes as other humans (Mitroff 1973). As humans, we categorize our world. We "categorize" events and objects, and we create rules by which typical events/objects are to be interpreted and dealt with. We have basic expectations about what should be associated with what, and we confront events/objects with naive hypotheses which is to be perceived (Bruner and Postman 1949). We infer missing information consistent with our beliefs about the orderliness of phenomena. What we see, then, depends to a certain extent on what we expect to see, or what we "look for." Our reality search is based on our outlook, on our point of view, on our frame of reference.

Societies construct frameworks for this interpretation of reality by institutionalizing broad frames of reference which define the ways in which experiences should be approached and understood (Holmner 1968). There is a social organization of order and a sociology of legitimating beliefs (Holmner 1968). Cognitive action, then, is socially structured and determined by the individual's participation in a social world. It is the coordination of these social worlds—the overlapping of frames of reference; the interrelationships between the individual, the individual's role, and the larger society; the common participation of individuals in the social "stock" of knowledge—that ultimately determines what reality "is" and will be.

In summary, scientific activity is just one social arena in which knowledge is constructed, and often the outputs of "scientific" activity are awarded a high status in society. This status may be unwarranted: scientists, like everyone else, are charged with creating order out of disordered array of observations, and there are no a priori reasons for supposing that scientists' practice is any more rational or "realistic" than that of outsiders (Latour 1979). Scientific investigation may be more creative, and what is ac-
cepted as scientific "knowledge" may be subject to different sorts of legitimation procedures than "knowledge" in the general sense, but scientific inquiry nevertheless exists and functions in a social arena. The scientific perspective is shaped by the social rules that govern the scientific community. This is not to say that science and scientific products are unnecessary or of dubious utility; rather, it is to point out that scientific inquiry may not deserve the objectivity that we tend to assume to be true of it. We should not assume that science is capable of "discovering" reality; instead, it should be understood that science helps to construct what is accepted as "real."

Because realities are socially and psychologically constructed, the same event may have multiple realities, each of which is valid. Thus we may judge a particular construction of reality as false from one social and psychological perspective only to find it valid when judged from another perspective. One implication is that, at best, a construct of reality cannot be falsified across the wide array of social and psychological factors that influence judgements of reality. The likelihood is high that a combination of factors exist which will produce an interpretation supportive of any one suggested reality. Moreover, it is quite unlikely, even within one set of factors, that we can falsify a statement about a complex phenomenon. This last point will be pursued in more detail in the following section.

FALSIFICATION

In their attempts to establish an epistemology for science which would exclude metaphysical statements, the proponents of logical empiricism have placed a heavy emphasis on the justification, rather than the discovery of theories. The goal of science was said to be the justification of theories via hypothesis testing. Logical empiricism imposed no restrictions on the invention of theories, and scientific objectivity was safeguarded by making theory acceptance dependent upon the outcome of careful tests (Hempel 1959). According to Fussfeld, "...logical empiricism embodies three steps ...(the) construction of a theoretical model...(deriving) hypotheses about reality from the theory...(and testing) the hypotheses against empirical data (1980,p.3)."

Consequently, the final task remaining for the logical empiricists was that of offering an objective criterion by which statements concerning reality could be assessed, while at the same time adhering to such prescriptions as explicated in the correspondence rules, the symmetry thesis, the notion of science as justification, and the notion of reductionism.

The search for a criterion which would evaluate the "truth" of a theory and/or its theoretical statements initially resulted in what was known as the principle of verifiability (Ayer 1973, p. 25). According to this principle, a statement only has meaning to the extent that it is verifiable, i.e. testable. In the strictest sense, this has been interpreted to mean that complete verification requires observational evidence which can be observed by the individual in his lifetime (Hempel 1959). The implications of this are, of course, quite severe. Not only would such a stringent criterion rule out unobservable discoveries, such as those of the atom and magnetic fields, but, as Caldwell points out, "Verifiability rules out as meaningless those statements of universal form which are often used in the specification of general scientific laws... (which) are not conclusively verifiable... (1980 p. 56)." In addition, the employment of the principle of verifiability does not allow for the possibility of other variables which might have an effect on the phenomenon under consideration but which may have been excluded.

In attempting to deal with this problem, Popper suggested that instead of trying to verify propositions, we should try to falsify them. Thus, falsification, according to Popper, is the criterion on which evaluations should be made. It appeared that Popper's approach would overcome the problem of not knowing if all relevant variables had been included or if the proposition had been tested under all conditions, since a falsified statement need not be false under any one condition and also allowed for the inclusion of universal statements. Further, according to Popper, "...every truly scientific hypothesis should be formulated so that it could be tested by a crucial experiment (Nalmon 1981, p. 6)," thus allowing it to be justified. This criterion of falsifiability, however, has several drawbacks. For example, it fails to account for the existence of falsifiable statements, e.g. "The proposition that there are abominable snowmen is probably false, but it cannot be strictly falsified, since we cannot search the whole space at every moment of its existence (Ayer 1973, p. 29)."

Many logical empiricists rejected the notion of falsifiability and turned to confirmability as a criterion for assessing the meaningfulness of statements. Concurrent with the development of this criterion was a change in emphasis from testing individual sentences to the testing of systems of sentences (Caldwell 1980), and the development of several deductive models (e.g. H-D model, D-N model and the I-P model) of confirmability and deflationist views of confirmability to proceed. Confirmability, however, is at best a weak criterion of acceptability. It is based on the assumption that "degrees of confirmability" of competing hypotheses can be established, but efforts to date have failed to produce rules by which the relative degrees of confirmation of competing hypotheses might be established (Caldwell 1980). Consequently, many philosophers of science are presently reconsidering this notion of verifiability.

Researchers in marketing, and particularly in consumer behavior, seem to generally adhere to the logical empiricist viewpoint, and we rely very heavily on the principle of falsification when testing propositions. If this perception of the current situation regarding the state of marketing is accurate, then it is important that we further examine the notion of "falsification" and its implications for the present and future development of marketing as a science.

While we emphasize in texts and research courses the importance of formulating statements in a manner which allows for falsification, the question still remains whether or not there exists an asymmetrical relationship between confirmation and falsification such that statements cannot be confirmed but can be falsified. Recent evidence seems to suggest that falsification is an extremely difficult task in the sciences, especially in social and natural sciences. The idea of falsification in the logical empiricist sense—as expressed by Popper—while appealing because of its logical precision is, according to Lakatos (1970), extremely naive and dogmatic in that science in reality does not develop in such a simple manner. According to Lakatos' (1970) argument, several problems emerge which would question the extent to which the falsification of a statement would be fact valid. The argument is that, assuming we can from the outset agree to what will be a "crucial experiment" for testing even an elementary hypothesis, and assuming that we can choose an appropriate level of significance by which to evaluate a divergence between the predicted and observed values of the phenomenon, we must still convince others that our experiment is free of systematic error. To do this, we often introduce the procedure of randomization to account for those variables "...which may change uncontrollably during the experiment...The choice of these variables...is again determined by the level of our knowledge...(Nalmon 1981, p. 7)." This raises the interesting point that, if the choice of our variables—both those we control on and those we manipulate—are determined by our level of knowledge (i.e., by our theories) then it would seem that the possibility of excluding an unknown variable (the conditions under which...
formed hypothesis might have been supported) is just as likely as the exclusion of variables in the case of verification. Consequently, we cannot be sure we have found an instance which refutes the hypothesis even given that we agree that we have performed a "critical experiment."

Berlin (1979), in addressing this issue with regard to pattern models (as opposed to more simplified models of the logical empiricist type in which explanation is causal in nature) suggests further problems with the notion of falsification. He argues that our concept of any phenomenon consists of a set of characteristics, \( n \), which are a subset of a wider set of co-variant characteristics, \( m \) (which may be finite), which constitute that phenomenon. Further, \( m \) may vary for different observers, times, and cultures. Berlin further argues that while a given set of propositions regarding the phenomenon may be false, the relevant propositions may remain true because no matter how "...much of \( m \) you falsify it will never demonstrate that \( n \) has been exhausted (Berlin 1979, p. 27-28)."

Berlin's work has important implications for theory testing. It could, for example, lead to the discarding of theories on the basis of having assumed that all "relevant" propositions have been examined and falsified. Further, if theories are to determine what set of \( m \) we select from \( n \) characteristics, Berlin's work would explain why two diametrically opposed views appear to be supported by the same data (as in the case of the wave and particle theories of light). This not only raises further questions with regard to Popper's view that the proliferation of theories will lead to the falsification of some theories and ultimately to the emergence of the "truth," but it would appear to add support to Peyerabend's position "...that the failure of a theoretical prediction to cohere with observations does not falsify the theory... (Suppe 1977, p. 641)." Consequently, Peyerabend will always be committed to a theoretical pluralism (Mitroff 1973).

Perhaps the most damaging argument to the asymmetry thesis derives from the work of Singer (1923), Churchman (1971), and Mitroff (1973). It has significant implications for Popper's notion that through the proliferation and testing of theories via the falsification principle we will retain the more appropriate theories and discard the others. Mitroff (1973) argues that all too often the testing of a theory is oversimplified. There has been a movement away from the testing of individual hypotheses to the testing of systems of hypotheses. The problem is one of dealing with the fact that a theory consists of a large number of statements; thus, even when the theory as a whole might be rejected (the extreme case) as a result of falsification, there is no way of knowing if all statements in the theory should be rejected.

Even in more limiting situations the falsification thesis runs into problems. Take two competing theories that in general produce contrary interpretations of some phenomenon. In order to test these theories some falsifying observations are required. How do we obtain such a set of observations? It is clear that "theories of science are not tested by a set of data (or observations) arrived at independently of the theory itself (Churchman 1970)." Consequently, not only may the data not be providing the best or most powerful test of a theory (Mitroff 1973), but the observations are also theory-laden and thus guide the determination of what is "relevant" to testing the theories. Even more problematic, however, is the fact that two opposing theories may result in different observational sets (e.g., behavioral vs. cognitive psychology), making the falsification process more complicated; it may become necessary to have a formal language by which disconfirming evidence expressed in one theory can be translated to the other. We could go on and raise further the issue of what happens when a third or fourth theory is introduced, or further demonstrate this in terms of symbolic logic, but let us return to our concern of what this means in terms of the notion of falsification. Throughout the process of falsification we encounter the demand to make strong judgments, and while part of this process may employ formal rules, much of it involves subjective judgments by "qualified scientific experts" who ascribe to a particular system of inquiry. As a result, one's viewpoint may determine one's method of verification.

In conclusion, perhaps the most fruitful way to view the notion of falsification, without totally destroying its utility, is in the manner suggested by Singer (1959). He concludes that theories can neither be completely falsified nor confirmed and that both these notions should be treated as "ideals," approachable but not achievable.

This paper has focused on three issues salient to the field of marketing and consumer behavior: metamethod, reality construction and falsification. In doing so, we have attempted to point out how the logical empiricist perspective fails to achieve the goals which it initially seeks. Logical empiricism, however, has become such a dominant force that it has, to a large extent, excluded other epistemologies that might offer a more clear understanding of phenomena.

REFERENCES


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