Metatheory and Metamethodology in Marketing: A Lakatosian Reconstruction

The Lakatosian sophisticated methodological falsification framework is introduced, compared with other philosophies of science, and applied to reconstruct marketing science. From this the location and intensity of extant theoretical conflicts are pinpointed and explained, marketing's scientific status evaluated, and implications for research methodology in the discipline discussed.

When Converse (1945), Alderson and Cox (1948), and Bartels (1951) fired the opening salvos concerning the scientific status of marketing, little did they realize that the resulting debate would rage for another four decades. Much of the controversy has focused on the appropriate subject matter and breadth for the marketing discipline (c.f. Arndt 1981). However, this dialogue has recently been overshadowed by an even more fundamental dispute over the metatheoretical underpinnings of marketing science. Resolution of this debate is essential for future progress in marketing because the adoption of a particular philosophical perspective affects what facts, theories, and methodologies will subsequently be acceptable to the discipline.

Some scholars, notably Hunt (1983a, 1984), have urged the perpetuation of logical empiricism, while others such as Zaltman, LeMasters, and Heffring (1982), Peter and Olson (1983), and Anderson (1983) have argued persuasively for the adoption of a relativistic perspective. Logical empiricism assumes that science is objective and emphasizes rigorous measurement and hypothesis testing. In contrast, relativism tends to emphasize the subjective and creative aspects of science. The time seems ripe for some form of a Hegelian dialectical synthesis between the apparently polar extremes represented by the logical empiricist thesis and the relativist antithesis respectively. Ideally, this new perspective should incorporate the best that can be offered by both these philosophies while minimizing their drawbacks.

One potential candidate for accomplishing this task is sophisticated methodological falsification (SMF) proposed by the late Imre Lakatos (1978) in his attempt to resolve a similar controversy between philosophers Thomas Kuhn and Karl Popper. Kuhn (1970) had proposed a model of scientific progress founded on the notion of a paradigm. Science is viewed by Kuhn to progress in a cycle commencing from one paradigm accepted throughout a particular scientific community and researched extensively during a period of “normal science.” As anomalies accumulate, a crisis stage may result, followed by the fall of the old paradigm and the emergence of another in a “scientific revolution.”
While paradigms deal with the proper domain of a science, what research questions are to be addressed, and the rules to follow in the interpretation of results, several criticisms have been directed at Kuhn’s thesis. Masterman (1970), among others, has noted that Kuhn uses the term paradigm in a variety of different ways, which leads to varied interpretations. For example, Arndt (1983) classified the political economy model as a paradigm, but in 1985 considers it a metaphor under the sociopolitical paradigm. Another point of difference is whether marketing science has been guided by a single paradigm. Most scholars (Arndt 1985, Carman 1980, O’Shaughnessy and Ryan 1979, Roberts 1984) have suggested that marketing has no central exemplar paradigm. In the Kuhnian sense, the discipline is in a preparadigmatic stage. If this is the case, then the sociopolitical (or any other) “paradigm” cannot be labeled as such.

Most importantly, Popper (1970) has questioned the Kuhnian representation of scientific enterprise as a succession of bold paradigms and their dramatic overthrows. Popper holds that scientific progress may be viewed as the proliferation of rival theories, that is, of revolution in permanence. In resolving this controversy, Lakatos (1978) introduced the notion of a research program. Instead of the multiple definitions associated with the term paradigm, the Lakatosian notion is unambiguous with respect to its constituent characteristics. The Lakatosian (SMF) perspective urges the existence and desirability of multiple theoretical foundations in a discipline, a formulation consistent with Popperian and Feyerabendian (1980) tenets and the contemporary structure of marketing science. Within each research program, the Lakatosian perspective retains the Kuhnian notion of solving specific problems (puzzles) with associated (middle-range) theories. Moreover, as will be later detailed, the Lakatosian perspective blends together both traditional tenets of empiricism (i.e., falsification) as well as more contemporary relativist notions (i.e., context in research in the form of research programs). It also recognizes the myopic nature of dogmatic falsification that ignores the tenacity with which scientific theories are held in the face of seemingly disconfirming evidence and rejects Kuhn’s notion of a single dominant paradigm in a discipline.

Thus, the first and primary purpose of this article is to reconstruct marketing science from the sophisticated methodological falsification perspective. Through this process it is hoped that some of the apparent disarray within the discipline can be systematically accounted for and marketing’s scientific status evaluated. A secondary objective is to extend the Lakatosian framework to the analysis of research methodology in marketing. Extant philosophical perspectives suggest a range of methodological direction, from the use of a specific approach such as structural equations modeling, to methodological anarchy. The Lakatosian perspective advocates methodological pluralism, the need to more deeply examine research methods in marketing, and the adoption of research methods both statistical and qualitative, that (1) expose theories to severe threats of refutation, and (2) aid in the discovery of new findings in the discipline.

The remainder of this article is organized as follows: The next section will provide a historical perspective on the development of falsification. In particular, the three major versions of falsification will be detailed. With that as background, a comparative analysis of various approaches in the philosophy of science will be presented, with a view towards advocating the Lakatosian perspective as a possible means of reconciling differences between empiricism and relativism. Marketing science will then be reconstructed from a Lakatosian perspective to identify and explain the location and intensity of extant theoretical conflicts in the discipline and to evaluate its scientific status. The second part of this article will address methodological issues from a Lakatosian perspective. The need for methodological pluralism is discussed, followed by an examination of research methods—both statistical and qualitative—from the Lakatosian perspective. Limitations of the Lakatosian perspective are then presented, followed by some concluding comments.

**Falsification**

It was Popper (1959, 1962) who first developed falsification as an alternative method of theory justification aimed at overcoming several difficulties associated with logical empiricism. Falsificationists argue that scientific practice cannot be rationally defended if it proceeds inductively, and that all scientific theories are hence equally unprovable and improbable (Serlin and Lapsley 1985). The three major versions of falsification are dogmatic falsification, naive methodological falsification, and sophisticated methodological falsification.

**Dogmatic Falsification**

Dogmatic falsification asserts that once a theory is disproved by the discovery of a single refuting instance, it should be eliminated from the body of scientific theories (Serlin and Lapsley 1985). While all theories are deemed fallible, dogmatic falsificationists assume the existence of an infallible empirical basis. This clear demarcation between facts and theories permits the unequivocal appeal to “hard facts” in evaluating fallible theories.

There are several shortcomings of the dogmatic falsificationist perspective. First, it has been posited
that there is no strict psychological boundary differentiating fact from theory (Kuhn 1970, Polanyi 1958). As Lakatos (1978, his emphasis) asserts, “. . . there can be no sensations unimpregnated by expectations, and therefore there is no natural demarcation between observational and theoretical propositions” (p. 15). Second, it is impossible to conclusively refute a theory because realistic test situations depend on much more than the theory under investigation (Duhamel 1953). Lakatos (1978) argues that any empirical test involves assumptions about initial conditions, measuring instruments, and auxiliary hypotheses constituting the ceteris paribus clause. An alleged refutation of the theory can be easily deflected by suggesting that something else in the ceteris paribus clause caused the result (Laudan 1977). In other words, since all theories contain a ceteris paribus clause, it is a theory plus the ceteris paribus clause that is subjected to empirical testing. Since it is always possible to replace the ceteris paribus clause, any single test of a theory is of little consequence, thus leading to the uncomfortable conclusion that all theories are not only equally unprovable and improbable but also equally undecidable (Serlin and Lapsley 1985).

**Naive Methodological Falsification**

Popper's (1962) naive methodological falsification perspective attempts to rescue science from skepticism by demonstrating that science is not only a corpus of assertions but also a system of conventions. The empirical testing process is recognized to be impossible without making a series of methodological decisions. Since no pure observations exist, what are to be regarded as facts must be conventionally agreed upon in light of a “. . . relevant technique” such that “anyone who has learned it will be able to decide that the statement is acceptable” (Lakatos 1978, p. 22). Hence, potential theoretical falsifiers are granted observational status by decision. The truth-value of such observations is arrived at by a relevant research method. Popperian falsificationists recognize that research methods and scientific theories are fallible, but, by decision, assume that they constitute unproblematic background knowledge subsumed by the ceteris paribus clause.

While this circumvents the problem of how fact is demarcated from theory, there is still the problem of how, given the ceteris paribus clause, a specific theory is subjected to refutation. Popper maintains that this is achieved by making another methodological decision. The researcher decides before an experiment is conducted what state of affairs is deemed acceptable as a falsification of the theory under test, irrespective of ceteris paribus. Thus, the Popperian perspective recognizes that theories cannot be subjected clearly to empirical testing because of ceteris paribus and auxiliary theories. However, to permit “objective” assessment, a researcher must stipulate in advance what events would constitute falsification without ad hoc appeals to ceteris paribus. Thus, the Popperian perspective handles the auxiliary-theory issue in theory testing by making a public, conventional decision to consider a theory falsified given the observation of specified outcomes.

Even so, the Popperian reconstruction of science has rarely been in accord with the actual history of scientific progress. Lakatos (1978) points out that many scientific theories have advanced despite apparent refutations by empirical data, thus testifying to the tenacity with which theories are held in the face of seemingly disconfirming evidence.

**Sophisticated Methodological Falsification**

The sophisticated methodological version of falsification appears to offer a more powerful reconstruction of science. Sophisticated methodological falsification (SMF) holds that while science cannot prove theories or establish their probability using probability calculus, it can, with the modus tollens, disprove them (Serlin and Lapsley 1985). However, in the SMF framework, mere criticism via refuting evidence is never sufficient for theory falsification, since one never evaluates a single theory but a series of theories within research programs.

This view of science argues that a research program contains a “hard core” of fundamental assumptions and theoretical propositions accepted as incontrovertible by scientists within the research program. Scientists are posited to insulate this hard core from refutation with a “protective belt” of auxiliary theories. This “negative heuristic” stems from a methodological decision to cordon off the core of their research program from the threat of refutation. That is, the modus tollens is forbidden to be directed at the hard core but, instead, it is the auxiliary theories that are subjected to rigorous testing.

In contrast to the negative heuristic which tells scientists what path not to follow, research programs contain a “positive heuristic” which guides the direction of research. The positive heuristic is composed of a set of guiding research questions and specifies the form theories will assume and what they will look like. The positive heuristic proceeds in the face of counterevidence and refutation, and there is no need to consider the presence of empirical anomalies as being decisive. Thus, refutations are not ignored but are considered inconclusive until the positive heuristic is able to confront the disconfirming evidence. The SMF

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1The modus tollens is the logical form of Popper’s (1959) falsification criterion which permits the deductive testing of theories. It may be represented as follows: A implies B; not B; therefore, not A.
perspective thus accounts for the relative autonomy and tenacity of scientific research programs.

Abandonment of a research program is only possible when (1) there exists a rival research program powerful enough to account for all the "facts" of the former program, (2) that rival research program offers novel, excess empirical content over the former program, some of which should be corroborated, and (3) the former program is no longer progressive (i.e., is degenerative) in that its positive heuristic is no longer able to generate novel findings.

Let us illustrate the distinction between the criticism of a research program and its abandonment with an example. Recently, concern has been raised on the neglect of mood and emotion in cognition (Taylor 1980) and the almost ubiquitous regard of affect as being postcognitive by information processing theorists (Zajonc 1980, 1984; Zajonc and Markus 1982). Similar sentiments have been echoed by consumer researchers who question the assumption that purchase behavior is necessarily preceded by choice and decision processes (Kassarjian 1978, Olshavsky and Granbois 1979, Sheth 1982).

More recently, however, there have been growing indications that the positive heuristic of the information processing research program appears ready to confront these issues and problems. Lazarus (1984) has proposed that "cognitive formulations should specify how various personal agendas . . . shape cognitive appraisal, and, in so doing, affect the propensity to experience certain emotions in particular environmental contexts" (p. 129). In this connection, Bower (1981) has proposed an associative network theory in which an emotion serves as a memory unit that can enter into associations with coincident events. The activation of this emotion unit is posited to aid retrieval of events associated with it and also primes emotional thematic for use in free association, fantasies, and perceptual categorization. Similarly, Fiske (1982) argues for the implication of schematic processes in interpersonal affective responses. In her model, affect is assumed to be stored with the generic knowledge structure and is thus available immediately upon categorization. Hence, evaluations and affect are cued by fitting an instance to a schema.

Other researchers have investigated how affect may influence decision-making strategies and risk-taking tendencies (Isen et al. 1982). In consumer research, Holbrook and Hirschman (1982) advocate that the information processing approach be enriched by an experiential perspective which considers consumer fantasies, feelings, and fun. Moreover, Petty and Cacioppo (1981) have proposed an Elaboration Likelihood Model of attitude change incorporating the traditional information processing assumption of diligent consideration of information (central route) as well as less thoughtful means of persuasion via simple cue association (peripheral route).

As a consequence of these developments, few researchers would advocate the complete abandonment of the information processing research program. For, even if a new research program emerges that can account for all its findings, the positive heuristic of the information processing research program appears at present to be able to generate novel findings.

**Comparative Analysis of the Various Approaches**

It is now appropriate to compare the SMF framework with alternative approaches in the philosophy of science. Such an analysis would provide a proper perspective for later discussion of the implications of the SMF framework for marketing and its application to the reconstruction of marketing science. To facilitate this comparison, Table 1 summarizes some of the conflicting views of positivists/empiricists (column 1) and relativists/constructionists (column 4) as perceived by Peter and Olson (1983). Column 2 depicts a view of science called modern empiricism by Hunt (1984), while the SMF framework is featured in Column 3. ²

The layout of Table 1 is not accidental. At the extremes are the traditional positivistic view and the more contemporary relativistic/constructionist perspective. In between are the more middle-of-the-road positions advocated by modern empiricism and sophisticated methodological falsification. The location of the SMF perspective along this continuum is particularly pertinent to the extent that it is a hybrid blending together several different traditions, viz. empiricism, conventionalism, and the Kantian activist approach to the theory of knowledge.

Indeed, the SMF perspective may offer a possible reconciliation between modern empiricism and relativism in that it assigns the objectivity and rationality of scientific research to a level of abstraction different from that of theoretical commitment. As points 1 and 4 of Table 1 show, the SMF framework distinguishes the world of propositions and ideas from the world of mental states, beliefs, and consequences. Logical positivism and modern empiricism generally address the former, while relativism is concerned with the latter level of abstraction.

²Except for the Lakatosian perspective, the other classifications in Table 1 are not consensus ones. Nonetheless, since these classifications have been previously used by marketing researchers, they are probably the ones most familiar to us. Moreover, they seem to be adequate for the present exposition. Interested readers may refer to Suppe (1977), Brown (1977), Chalmers (1976), and Lakatos and Musgrave (1970) for detailed comparative analyses of specific philosophers of science.
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<td><strong>1. Science discovers the true nature of reality.</strong></td>
<td>There is a real world and, although science attempts to discover the nature of reality, the “true” nature of reality can never be known with certainty.</td>
<td>The direction of science is determined mainly by human creative imagination and not the universe of facts. Thus, the rational reconstruction of scientific progress occurs in the world of ideas.</td>
<td>Science creates many realities.</td>
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<td><strong>2. Only the logic of justification is needed to understand science.</strong></td>
<td>It is useful to distinguish between the procedures that science uses to discover its knowledge-claims from those that science uses to accept or reject (justify) its knowledge-claims. The academic discipline of philosophy of science historically focused on issues in justification.</td>
<td>The process by which research programs are established, justified, and accepted throughout a scientific community are needed to appreciate science.</td>
<td>The process by which theories are created, justified, and diffused through a research community are needed to understand science.</td>
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<td><strong>3. Science can be understood without considering cultural, social, political, and economic factors.</strong></td>
<td>The procedures that science uses to justify its knowledge-claims should be independent of cultural, social, political, and economic factors.</td>
<td>Criticism of scientific theories is based on empirical evidence, but abandonment of a research program involves extra-experimental considerations.</td>
<td>Science is a social process and cannot be understood without considering cultural, social, political, and economic factors.</td>
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<td><strong>4. Science is objective.</strong></td>
<td>Although complete objectivity is impossible, science is more objective in justifying its knowledge-claims than nonsciences, e.g., medical science is more objective than palmistry.</td>
<td>The demarcation of science from pseudoscience is objective in the world of ideas and propositions. Theoretical commitment is an issue of the world of mental states, beliefs, and consequences.</td>
<td>Science is subjective.</td>
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<td><strong>5. Scientific knowledge is absolute and cumulative.</strong></td>
<td>Scientific knowledge is never absolute. Much of scientific knowledge is cumulative, i.e., we really do know more about the causes of infectious diseases today than we did 100 years ago.</td>
<td>Scientific knowledge is never absolute. Appraisal must involve a series of theories; any part of the body of science is replaceable but only in a “progressive” way, i.e., substitutes must successfully anticipate novel facts.</td>
<td>Scientific knowledge is relative to a particular context and period of time in history.</td>
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<td><strong>6. Science is capable of discovering universal laws that govern the external world.</strong></td>
<td>Science attempts to discover regularities among the phenomena in the real world. Some of these regularities are stated in universal form and others are stated in probabilistic form.</td>
<td>Whether a proposition is a fact or a proposition in a test situation depends on a scientist’s methodological decision within the context of a research program.</td>
<td>Science creates ideas that are context-dependent, i.e., relative to a frame of reference.</td>
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<td>7. Science produces theories that come closer and closer to absolute truth.</td>
<td>Much of scientific knowledge is cumulative. Absolute truth is not knowable by science.</td>
<td>Absolute truth may not be achievable by science, but scientific research programs may yet in the long run lead to ever more true and fewer false consequences and, thus, have increasing verisimilitude.</td>
<td>Truth is a subjective evaluation that cannot be properly inferred outside of the context provided by the theory.</td>
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<td>8. Science is rational since it follows formal rules of logic.</td>
<td>Science is rational since its purpose is to increase our understanding of the world. It does so through developing theories, models, lawlike generalizations, and hypotheses which purport to describe, explain, and predict phenomena.</td>
<td>If science aims at truth, it must aim at maintaining consistency as an important regulative principle. Inconsistency must be seen as a problem to be resolved.</td>
<td>Science is rational to the degree that it seeks to improve individual and societal well-being by following whatever means are useful for doing so.</td>
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<td>9. There are scientific rules for doing science validly (e.g., falsification).</td>
<td>There are norms for doing good science. For example, theories should be testable, measures should exhibit reliability and validity, and data should not be fabricated or otherwise fraudulently collected.</td>
<td>There are norms for doing good science. In addition to Hunt's criteria, research programs must be evaluated by their heuristic power—how many new facts do they produce and how capable are they in explaining refutations during their development.</td>
<td>There are many ways of doing science validly that are appropriate in different situations.</td>
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<td>10. Scientists subject their theories to potential falsification through rigorous empirical testing.</td>
<td>Theories are subjected to the empirical testing process.</td>
<td>A theory is “scientific” only if it has corroborated excess empirical content over its rival, i.e., only if it leads to the discovery of novel “facts.”</td>
<td>Scientists seek supportive, confirmatory evidence in order to market their theories.</td>
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<td>11. Measurement procedures do not influence what is measured.</td>
<td>Absolute perfection in measurement procedures is impossible.</td>
<td>While experience still remains an impartial arbiter in scientific (measurement) controversy, the importance of decisions in methodology should not be neglected.</td>
<td>Nothing can be measured without changing it.</td>
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<td>12. Data provide objective, independent benchmarks for testing theories.</td>
<td>The empirical testing process provides good grounds for accepting some knowledge-claims and rejecting others.</td>
<td>The empirical testing process provides the ultimately necessary but never sufficient grounds for refutation. No experiment, observation state, or well-corroborated low-level falsifying hypothesis can lead to falsification without the emergence of better theories. A historical emphasis is required.</td>
<td>Data are created and interpreted by scientists in terms of a variety of theories, and thus are theory-laden.</td>
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In regard to the nature of scientific knowledge (points 5 through 8 in Table 1), all but the logical positivist perspective advocate that scientific knowledge is never absolute. While the sophisticated methodological falsificationist agrees with the modern empiricist that scientific knowledge is mainly cumulative (points 5 and 7), he/she is cognizant that scientific research involves methodological decisions set within a particular context, i.e., that of a research program. Moreover, while the empiricist position in column 2 simply states that scientific knowledge is cumulative, the Lakatosian perspective provides a description of the underlying dynamics of why science is progressive in stating that the appraisal of research programs involves a series of theories, and that old theories can only be abandoned when new ones emerge that successfully anticipate new facts.

The modern empiricist and the sophisticated methodological falsificationist are most in agreement in regard to the role of empirical testing of theories (points 9 through 12). While the modern empiricist makes a rather vague claim that the empirical testing process provides “good grounds” for acceptance of knowledge claims, the sophisticated methodological falsificationist clarifies this position by asserting that the empirical testing procedure is ultimately necessary but never sufficient grounds for refutation (point 12). Falsification and subsequent abandonment is only possible with the emergence of better theories with excess empirical content over their rivals, a point not addressed by the modern empiricist (point 10).

In sum, the Lakatosian perspective may provide the vehicle of sophisticated methodological falsification to the modern empiricist and bridge the gap between relativists and empiricists in emphasizing the roles of context in research in the form of a research program and the importance of methodological decisions in research.

**Marketing Science Reconstructed**

This section is concerned with a Lakatosian reconstruction of marketing science (see Figure 1). It is proposed that marketing science be considered a master research program comprising a collectivity of distinct but related research programs forming its protective belt. Further, the Lakatosian reconstruction is extended here to incorporate the notion of a middle-range theory (Merton 1957) at the next level. A middle-range theory is one which is “intermediate to the minor working hypotheses evolved in abundance during the day-to-day routines of research, and the all-inclusive speculations comprising a master conceptual scheme” (pp. 5–6). Finally, at the outer periphery of the proposed scheme are the working hypotheses of individual research efforts of marketers.

**FIGURE 1**

**Modified Lakatosian Reconstruction of Marketing Science**

A = hard core (guiding research questions, general propositions/assumptions, integrated models, and classification schemas)
B = protective belt (research programs)
C = middle-range theories
D = working hypotheses

**Hard Core and Protective Belt**

Perhaps the most difficult aspect of the reconstruction is the delineation of the hard core of marketing science. However, we may be fortunate in that much of the infrastructure necessary in determining the basic tenets and propositions of marketing science has recently been presented. Hence, Hunt (1983b) views marketing as the behavioral science seeking to explain exchange relationships between buyers and sellers and provides four fundamental explananda that can serve as the central tenets of marketing science in the reconstruction:

- Buyers engage in behavior directed at consummating exchanges.
- Sellers engage in behavior directed at consummating exchanges.
- Institutional frameworks exist which are directed at consummating and/or facilitating exchanges.
- The consummation and facilitation of exchange between buyers, sellers, and institutional mechanisms affect society.
Beyond a listing of the basic tenets of marketing science, the SMF framework requires that the propositions/assumptions generally accepted within a discipline be defined. Fern and Brown (1984) provide initial insight for this purpose. They reviewed 20 general marketing texts and found some 193 marketing “principles.” From these they developed three propositions generalizable across industrial and consumer contexts. These general propositions center on how buyer behavior (e.g., frequency of purchase, level of knowledge, and the number of buyers in the market) affects seller behavior and the institutional frameworks that exist to consummate and/or facilitate exchanges. Although it is beyond the scope of this article to develop an exhaustive set of such general propositions, the Fern and Brown approach offers interesting possibilities for the construction of marketing theory, for its premise is that once a fact has achieved “textbook status” it tends to become part of a discipline’s body of knowledge.

It is now possible to explicate the positive heuristic of the marketing discipline. Hunt (1983b, p. 13) provides a set of guiding research questions associated with each of the central tenets:

- Why do which buyers purchase what they do, where, when, and how?
- Why do which sellers produce, price, promote, and distribute what they do, where, when, and how?
- Why do which kinds of institutions develop to engage in what kinds of functions or activities to consummate and/or facilitate exchanges, and when will these institutions develop, where, and how?
- Why do which kinds of behaviors of buyers, sellers, and institutions have what kinds of consequences on society, when they do, where, and how?

The positive heuristic also contains a prescription for what form the theories developed from the guiding research questions will assume and what they will look like. Based on current theorizing, these will include integrated models and classification schemas that portray the exchange behavior of and between humans, institutions, and society. Each must be well-grounded in one or more of the marketing discipline’s rich theoretical bases that include psychology, sociology, economics, organizational theory, and political science. In addition, classification schemas should meet Hunt’s (1983a) five criteria of specification adequacy, adequacy of characteristics used in classification, mutual exclusiveness and collective exhaustiveness of categories, and utility to the marketing community.

The protective belt of research programs in marketing are those in buyer behavior, seller and competitive behavior, institutional behavior, and environmental behavior. These include the political economy, microeconomic, conflict resolution, general systems, functionalist, social exchange, behavior modification, and information processing research programs. As an illustration, Figure 2 outlines the structure of the information processing research program. The dashed lines indicate that there are no rigid boundaries between the various middle-range theories and working hypotheses. Figure 2 is not intended to be exhaustive or definitive but is presented to identify examples from various subfields of marketing affected by this particular research program. Similar reconstructions can be made for other research programs in marketing.

At least two points come to mind in analyzing Figure 2. First, while the information processing research program primarily addresses problems in the areas of buyer behavior and promotional strategy, it also affects other subfields in marketing. For example, the transactions costs approach (Williamson 1975) used in the marketing channels and strategy area has bounded rationality as one of its behavioral postulates. This assumption is founded on the notion that humans have limited information processing capacity. Second, in addition to the competition between research programs discussed below, there is also competition between middle-range theories within a research program. For example, the issue concerning knowledge representation in memory can be viewed from a categorical versus a schematic perspective (Mandler 1979).

It is in the protective belt that some of the conflict between marketers has arisen. Yet, based on the Lakatosian reconstruction, this is precisely where points of disagreement should emerge. Thus, under the SMF framework, the rival explanations of consumer behavior offered by behaviorism (McSweeney and Bierley 1984, Nord and Peter 1980, Peter and Nord 1982) and information processing (Bettman 1979; Lachman, Lachman, and Butterfield 1979; Sternthal and Craig 1982) is not unexpected. Indeed, the generation of counter-instances by one conceptualization against the other does not threaten the refutation of one or the other nor of the hard core of marketing itself. Moreover, the rivalry is not necessarily dysfunctional as long as both conceptual accounts are progressive in the sense that both generate new findings and no other account emerges that is sufficiently powerful to explain all the facts that they do.

Middle-Range Theories and Working Hypotheses

At the next level of the proposed scheme are the middle-range theories which constitute another major source of debate and controversy. The degree of fragment-
FIGURE 2
Illustrative Structure of the Information Processing Research Program

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<th>Central Tenets</th>
<th>Buyers and sellers process and act on information received and attended to.</th>
<th>Buyers and sellers store and represent information they process in memory for later retrieval and use.</th>
<th>Buyer and seller behavior results from the interaction of innate information processing capacities and learning experiences.</th>
<th>Buyers and sellers have limited information processing capabilities which may result in the use of heuristics in problem solving and decision making.</th>
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<tr>
<td>Guiding Research Questions</td>
<td>How do buyers and sellers acquire, integrate, and act on information presented to them?</td>
<td>How do buyers and sellers represent information in memory, and how do they retrieve it from memory?</td>
<td>What cognitive skills do buyers and sellers possess, and how are these developed and refined?</td>
<td>What are the information processing capabilities of buyers and sellers? What are the heuristics used and in what situations are they applied? How do these affect behavior?</td>
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tation and inconsistency is more intense at this level. One reason for this is that there are simply a greater number of middle-range theories (both within and across research programs) compared to higher level research programs. Second, much empirical research is necessarily restricted in scope, examining only selected aspects of a theory (Bagozzi 1984), thus giving rise to the diversity of topics studied.

For example, consumer behavior may be interpreted in terms of a cognitive response, message learning, or a combinational approach within the information processing research program (Petty and Caccioppo 1981). In addition, it may be considered from the behavior modification research program in terms of a classical conditioning, operant conditioning, or vicarious learning approach (Nord and Peter 1980). In the marketing channels and strategy area, the middle-range theories subsumed by the political economy research program include the transactions costs approach (Williamson 1975), the agency cost model (Jensen and Meckling 1976), Pfeffer and Salancik’s (1978) resource dependency perspective, and Anderson’s (1982) constituencies-based theory of the firm.

At the lowest level in the proposed scheme are the
working hypotheses. In the SMF framework, few experiments concerned with testing individual working hypotheses are considered crucially important. Indeed, the extent of fragmentation is at its height for, in addition to the vast number of hypotheses generated, there is the problem that few of them are so well-articulated that they issue from a single middle-range theory. The latter thus gives rise to possible multiple interpretations of the same data. For example, both self-perception and cognitive dissonance theory have been proposed to explain why people change their attitudes (Petty and Cacioppo 1981, pp. 170–171). On the issue of pricing through a distribution channel, alternative accounts have been provided concerning the function of quantity discounts. These include the transfer of inventory/production costs, channel coordination, and price discrimination (Jeuland and Shugan 1983). The problem of multiple interpretations of the same data can be alleviated if potential falsifiers are specified in advance, thus preventing recourse to alternative explanations subsumed under the ceteris paribus clause.

However, under the SMF framework, it is inappropriate to suggest that a theory having “seven facts for it against three against it is not in good shape” (Meehl 1978, p. 823). Under the SMF framework, theories are pitted against each other, with confirmations also providing outcomes of interest (Serlin and Lapsley 1985). Indeed, the history of physics is replete with subsequently successful research programs that proceeded in “oceans of anomalies” and disconfirming evidence (Lakatos 1978). It is too rash to overthrow a theory because of a recalcitrant fact, and few researchers would do so in any of the mature sciences or in marketing.

Under the SMF framework, the rational procedure is to examine empirical discrepancies by thorough testing of the ceteris paribus clause and applying the positive heuristic to uncover new facts. Given this, the variety of middle-range theories derived from higher level research programs in the “protective belt” of the marketing discipline should be in a constant state of contemporary and historical evaluation (Savitt 1980). None can be refuted without the emergence of a superseding theory satisfying the criteria of offering novel, excess information, some of which should be corroborated.

Hence, theory proliferation is encouraged under the Lakatosian framework, as competition between research programs and middle-range theories is essential for scientific progress. On this point, Lakatos is in agreement with Popper (1970) and Feyerabend (1980) in arguing that Kuhn (1970) was incorrect to suggest that the benefits of theoretical monopoly exceeded that of theoretical pluralism. However, the SMF framework does not and is not meant to provide sanc-
to indicate that the two research programs may be more complementary than competing, with centralization of power being a major discriminating element.)

What about marketing as a discipline itself? History has it that it evolved out of economics. However, it is evident that marketing has not replaced its original parent discipline. Indeed, based on the SMF perspective, this will not occur unless economics becomes a degenerative body of research programs. The shift away from so-called received microeconomic theory with its almost total dependence on axiomatic models that are not empirically validated towards new theories with a strategic orientation (e.g., in information economics and industrial organization economics) seems to ensure a progressive body of research programs in economics. Moreover, the relationship between marketing and economics has gradually evolved from a superior-subordinate basis towards a coworker basis. For example, the interface and cross-fertilization of ideas between marketing and economics has recently been highlighted (Horsky and Sen 1980) with particular reference to pricing (Hauser 1984, Nagle 1984).

However, marketing has yet to become a mature science in the Lakatosian sense, for a mature science contains a set of research programs "in which not only novel facts but, in an important sense, also novel auxiliary theories, are anticipated; mature science—unlike pedestrian trial-and-error—has 'heuristic power'" (Lakatos 1978, p. 88). As detractors of marketing have asserted, the discipline has its share of "patched-up, unimaginative series of pedestrian 'empirical adjustments'" which have "... no unifying idea, no heuristic power, no continuity" (Lakatos 1978, p. 88). Such forms of research have been condemned as being shotgun, atheoretical exercises in fact gathering and data collection (Jacoby 1978, Olson 1982). Consequently, it may not have been too surprising for Leone and Schultz (1980) to remark that scientific generalizations have been rather elusive in marketing.

**Metamethodology in Marketing**

The focus of discussion now shifts from marketing's metatheoretical underpinnings toward its methodological orientation. In contrast to the vigorous dialog concerning the discipline's philosophical allegiance, debates about method at a meta level have been more infrequent (Sauer, Nighswonger, and Zaltman 1982). Deshpande (1983, p. 104) has remarked that less attention has been focused on "the implications of marketing theory for marketing research method."

Essentially, this issue turns on the question of whether marketing's metatheoretical perspective biases its research methodologies. Anderson (1983) has noted that the discipline's logical empiricist perspective is characterized by its reliance on the inductive statistical method exemplified by the PIMS studies, while Deshpande (1983) has commented on its neglect of qualitative methods. Indeed, Bagozzi (1984) has advocated that structural equations modeling be the appropriate research method for marketing. While it is not disputed that structural equations modeling has a rightful place in marketing research, there is danger in being overly dependent on a particular method. Box (1976) labels this methodological singularity as *cookbookery* or the tendency "to force all problems into the molds of one or two routine techniques, insufficient thought being given to the real objectives of the investigation or to the relevance of the assumptions implied by the imposed method" (p. 797).

**Methodological Pluralism**

The SMF framework, in contrast, calls for a methodological pluralism in the discipline—a view consistent with the Lakatosian tenet of trying to look at things eclectically. The proliferation of rival theories thus extends to research methodologies. However, the SMF perspective does not sanction methodological anarchy (Feyerabend 1980) with its "anything goes" prescription that seems to suggest maintaining an inventory of research techniques simply for the sake of variety. Rather, it calls for the need to more deeply examine the limitations, assumptions, and relevance of research methods employed in marketing research.

Recent reviews of factor analysis (Stewart 1981), repeated measures analysis (LaTour and Miniard 1983), stepwise multiple regression (McIntyre et al. 1983), cluster analysis (Punj and Stewart 1983), discriminant analysis (Crask and Perreault 1977), canonical correlation (Lambert and Durand 1975), conjoint analysis (Green and Srinivasan 1978), statistical significance testing (Saywer and Peter 1983), and structural equations modeling (Bagozzi 1980, Fornell 1983) represent attempts at accomplishing this objective as well as pointing out possible misapplications of a research method. Moreover, such efforts have implications at a deeper, methodological level. Hence, if marketing science should aim to seek knowledge for the sake of knowledge and de-emphasize its ties with the marketing manager (Anderson 1983, Hunt 1984), the argument that marketers need only *apply* research methods is considerably weakened. Attempts at assessing the problem-solving efficacy, advantages, and limitations of research methods should therefore be encouraged, particularly in light of their growing sophistication (Helgeson et al. 1984). Furthermore, in the SMF framework, the research method would constitute an integral part of the ceteris paribus clause whenever a theory is put to test. Hence, it is essential to thoroughly examine the research method in testing.
the ceteris paribus clause before any anomaly can become a refuting instance.

In so doing, however, marketing researchers should resist the temptation termed by Box (1976) as mathematics, which is a tendency to redefine rather than solve a statistical problem. "Typically, there has once been a statistical problem with scientific relevance but this has long since been lost sight of" (Box 1976, p. 797). Box argues that mathematics is harmful because researchers who are not themselves statisticians may become "(O)verawed by what they do not understand, . . . mistakenly distrust their own common sense and adopt inappropriate procedures devised by mathematicians with no scientific experience" (p. 798). Clearly, this implies the need for applied and mathematical statisticians as well as designers of investigations and data analysts in the discipline.

Further, consistent with the views of Popper (1959) and Laudan (1984), the SMF perspective argues that it is reasonable to adopt only those methods that marketing researchers can rationally defend as being likely to achieve their objectives. It is contended that the methodological objectives of marketing researchers based on SMF tenets are: (1) to subject theories to strong threats of refutation, and (2) to apply research methods with the greatest problem-solving efficacy to uncover new findings. Both these objectives will contribute to marketing's achieving status as a mature science by aiding the development and validation of theories in the discipline. Several modern research methods in marketing will now be examined along SMF tenets, including null and range hypothesis testing, structural equations modeling, and various qualitative methods.

**Statistical Methods**

The dominant data analytic technique in marketing is the classical test of statistical significance. For example, Peter (1983) reports that many consumer researchers often rely on statistical significance tests to provide evidence for the validity of their research hypotheses. Several scholars in psychology (Meehl 1967, 1978), education (Carver 1978), and marketing (Peter 1983, Sawyer and Peter 1983) have faulted its use. Meehl (1978) asserts that "... the almost universal reliance on merely refuting the null hypothesis as the standard method for corroborating substantive theories is a terrible mistake, is basically unsound, poor scientific strategy, and one of the worst things that ever happened in the history of psychology" (p. 817). Likewise, Peter (1983) remarks that statistical significance tests "... taken alone, as they frequently are in consumer research, provide an insufficient hurdle for judging research findings" (p. 391).

These criticisms point to the deleterious effect that traditional null-hypothesis testing has had on the detection of progress and the accumulation of knowledge in marketing. Thus, if we are to avoid being drowned "in a mass of meaningless and potentially misleading junk" (Jacoby 1978, p. 87), marketing researchers must reevaluate this method for its usefulness in generating and accepting knowledge. This is because under falsificationist tenets, scientific theories must be continually subjected to severe tests. If marketing is incapable of generating such tests and cannot expose its theories to strong tests of refutation (even with increasing measurement precision), then its objective of achieving the status of a mature science might be seriously undermined.

The basic problem with null-hypothesis testing procedures lies with the inferences about substantive theories made from the statistical information they provide (Meehl 1967). The appraisal of a substantive theory T entails some constraint on the population value of the statistical parameter $\mu$. However, the constraints on $\mu$ in marketing are said to be weak (since we test against the straw man competitor, zero). Statistical precision provides information for drawing inferences about how adequately a researcher has established the actual value of $\mu$ and with what degree of confidence conclusions regarding T can be made (Serlin and Lapsley 1985).

The crucial question is, having arrived at an estimate of $\mu$, even with perfect precision, how does this affect the plausibility of T? Meehl (1967) would argue that the typical null-hypothesis test in marketing is so weak as to be worthless when passed. This is true not because of any uncertainty regarding the posterior estimation of the tested parameter's value but because the prior parameter constraint is so meager. In short, the initial constraint on $\mu$ in marketing would be so weak that the statistical test cannot speak meaningfully to the plausibility of T. The reason for this is that the null hypothesis in marketing has little to do with point values or function forms derived from theory. As such, rejection of the null—which is quasi-always false (Meehl 1967, 1978) and can almost always be assured with sufficient statistical power—provides an easy observational hurdle for theories in marketing.

Bagozi (1984) offers an alternative method for theory construction and testing in marketing based on the structural equation approach. In contrast to the rejection-support form of traditional null-hypothesis testing, where rejection of the null implies empirical support for the theory being tested, the structural equation method is an example of the acceptance-support form of hypothesis testing. Under the latter, the role of the research hypothesis is reversed (Fornell 1983), and it is the acceptance of the null hypothesis (derived from substantive theory) that provides empirical support for the theory under test. The good-
ness-of-fit test in the structural equations approach has as its null hypothesis there being no difference between the hypothesized model and the data. Empirical support for the model is obtained by nonrejection of this null hypothesis.

This form of hypothesis testing is not without its flaws. Recall that with sufficient power the null is almost always rejected. For the rejection-support form of hypothesis testing, this means that empirical support for one’s theory is conceivably always forthcoming, which in turn implies that few (if any) theories will be invalidated. For the acceptance-support form of hypothesis testing, sufficient power will ensure that the substantive theory (hypothesized model) under test will be refuted with the almost guaranteed rejection of the null. This further implies that one can conceivably never find empirical support for one’s theory and, in turn, a discipline may be left without any theory whatsoever.\(^3\)

One solution to this problem lies in adopting a method that is consistent with the SMF perspective and that, even with infinite sample size, does not always reject the null hypothesis. As Meehl (1978) has noted, when a scientist examines an experimental result, he/she considers the degree to which it is in reasonably good accord with theory. Such a scientist has therefore set standards that indicate what kinds of experimental outcomes are good enough. In effect, this imposes a set of constraints on the statistical parameters to be estimated from sample data. It is an extension of the falsificationist demand that scientists establish, in advance, what they will accept as a refuting instance.

Serlin and Lapsley (1985) recommend a hypothesis testing procedure based on this “Good-Enough Principle.” Essentially, their procedure involves the replacement of the traditional null hypothesis of no difference by a complex range null hypothesis stipulating a region of effects of trivial difference.\(^4\) The magnitude of this “good-enough belt” may be expressed in terms of effect sizes or measures of association. When the experiment is performed, a statistical test is used to establish if the expected value of the dependent variable is within the good-enough belt. If the data indicate so, then the null hypothesis is not rejected and empirical support for the theory is not obtained. Note that the effects of increased sample size are not problematic, since with increased precision the imprecision involved in estimating the population value is reduced. In the limit of infinite precision, theoretical support is obtained by finding a sample value outside the good-enough belt. Lack of such support is evidenced by a sample value found within the good-enough belt. Thus, even with infinite sample size, the null hypothesis with a good-enough belt is not always false. For a more detailed exposition and a numerical illustration of the statistical procedure used to accompany good-enough hypothesis testing, see Serlin and Lapsley (1985).

Several suggestions have recently been forwarded to overcome the problems in structural equations modeling (e.g., Fornell and Bookstein 1982, Fornell and Larcker 1981). One such method proposed by Bentler and Bonett (1980) seems to be particularly consistent with the tenets of good-enough hypothesis testing. Briefly, their method involves hierarchical comparisons and the use of normed and nonnormed incremental fit indices that reduce the problem of sample size and eliminate that concerning the reversal of the role of the research hypothesis.

The Bentler and Bonett (1980) approach is still open to potential abuse in the case where models that would be rejected on an overall chi-square test may be accepted because they represent a statistically significant improvement over an alternative and highly unlikely null model. Based on the good-enough principle, however, this drawback can be alleviated since a researcher would be required to stipulate in advance a good-enough null model derived from substantive theory as well as the incremental improvements in fit that would be considered acceptable. Indeed, it suggests that researchers also specify a priori the alternative models that will be used in hierarchical comparison. By so doing, competing models are tested against each other and not merely against data. Moreover, ex post facto analyses (e.g., examining partial derivatives or modification indices) that represent a source of pedantic empirical adjustment discussed earlier are prevented. As Cliff (1983) cautions, once a researcher starts adjusting a model in light of the data, “the model loses its status as a hypothesis, and that model finally chosen represents in practice a much more unstable picture of what is really going on” (p. 124).

In sum, the good-enough principle serves at least three purposes: (1) the a priori specification of what effects (models) are of substantive significance follows falsificationist tenets of defining what a scientist
will accept as “facts”; (2) provides a more powerful test of a theory by insisting that scientists quantitatively specify in advance what difference (incremental improvement in fit) will be considered credible and empirically relevant; and (3) by stiffening the observational hurdle, reduces the number of theories-of-the-month while developing a body of good-enough theories.

Qualitative Methods

Recently, interest has been rekindled regarding the role of qualitative methods in marketing (Deshpande 1983, Dröge and Calantone 1984). Based on the SMF perspective, the key issue appears to be whether qualitative methods can help provide additional insights beyond that furnished by quantitative (statistical) methods. This appears to be the case. First, qualitative methods may aid in discovering new propositions or hypotheses (Reichardt and Cook 1979) such as theories-in-use (Zaltman, LeMasters, and Heffring 1982). Since this is a well-documented benefit of qualitative methods, we shall not pursue it in greater detail here.

Second, qualitative methods may be employed for rigorous theory testing. Campbell (1975), for example, discussed how to create “degrees of freedom” in case studies, arguing for capitalizing on the richness of detail within a single case by looking for multiple implications of the theoretical ideas being tested. The single case thus becomes a set of diverse manifestations of a theory. Each manifestation rather than each case can be thought of as a unit of analysis in which a particular effect may be present. When examined as a whole, the single case has more observations than variables. This creates sufficient degrees of freedom for tests of substantive hypotheses. An interesting example of Campbell’s method is Wilson’s (1980) case study of the New England fresh fish market which tested implications drawn from Williamson’s (1975) transactions costs approach.

McClintock, Bramon, and Maynard-Moody (1983) extended Campbell’s (1975) proposal in three significant ways in introducing their case cluster method. These include: (1) using survey sampling procedures and the optional addition of quantified measurement and multivariate statistical techniques to qualitative approaches for data analysis; (2) defining implementable units of analysis that are both sufficiently stable for sampling purposes and lend themselves to the possible application of standardized codes; and (3) having key informants assist in the enumeration of a sampling frame, a procedure somewhat analogous to snowball sampling. This approach is an example of how statistical and qualitative methods can be fruitfully combined in theory testing. Both the case study and case cluster method thus appear to be amenable to classical as well as range hypothesis testing.

Another area of contribution for qualitative methods lies in their use for triangulation purposes (Deshpande 1983). The effectiveness of triangulation is based on the premise that the weaknesses of one method will be offset by the counterbalancing strengths of another. Jick (1983) delineated five important benefits of triangulation: (1) it allows researchers to be more confident of their results; (2) it stimulates the creation of inventive methods and new ways of capturing a problem to balance with conventional data collection techniques; (3) it helps to uncover deviant dimensions of a phenomenon out of which old theories are modified or new theories developed; (4) it synthesizes or integrates existing theories; and (5) it serves as a test for competing theories.

A final advantage implicit in the discussion surrounding qualitative methods lies in their variety. Van Maanen, Dabbs, and Faulkner (1982) provide a discussion of various qualitative methods including case studies, participant observation, content analysis, formal and informal interviewing, archival data surveys, historical analysis, frame analysis, and ethnography. However, just as with statistical methods, methodological assessments need to be carried out to determine the problem-solving efficacy of qualitative methods. Initial work on the key informant technique (e.g., Houston and Sudman 1975, John and Reve 1982, Phillips 1981) and focus groups (Calder 1967) seems to be promising.

Limitations

A first limitation of the SMF perspective is the acceptability of its middle-of-the-road characteristic by adherents of empiricism and relativism. Indeed, Lakatos has been criticized for not being enough of a relativist or an empiricist (Berenson 1976, Toulmin 1976). Thus, a possible limitation is marketing’s reluctance to accept the Lakatosian middle-of-the-road characteristic.

A second criticism of the SMF perspective is that it provides no specific measure of scientific progress so that it is difficult to determine if researchers in a discipline are making better or worse choices (Suppe 1977, Toulmin 1976). In its defense, the SMF perspective offers sound criteria for the evaluation of the progressivity of research programs (e.g., internal consistency, originality, unifying potential, and heuristic power). Evidence for this may be found by examining the number and quality of middle-range theories and the extent of research activity at the level of working hypotheses in a particular research program. Moreover, to the extent that researchers pursue a research program based on some sort of a cost/benefit computation (Laudan 1977), a research program’s progressivity can be “measured” by its ability to attract
and retain the brightest and most creative researchers in the discipline. These researchers would be the ones most capable of extending the positive heuristic of a research program and ensuring its continuity.

A third criticism leveled at the SMF perspective is that the hard core of a research program does not constitute scientific reality (Berkson 1976). In other words, researchers are seen to freely and easily shift their allegiance from one research program to another. However, it is posited that this process is far from easy. As an illustration, few behaviorists would subscribe to the information processing research program overnight, and vice versa. The Lakatosian explanation is that, as long as the positive heuristic of behaviorism continues to generate novel facts, both research programs would continue to be pursued.

A final criticism directed towards the SMF perspective is that it does not emphasize the creative aspects of theory construction (Toulmin 1976). In his defense, Lakatos intended to extend Popper's falsificationist perspective in a progressive manner with his notion of the research program. As such, it was not his objective to suggest explicit means of creating theories. However, by advocating a historical view of science, it may be argued that Lakatos indirectly addresses issues in the (so-called) logic of discovery. Moreover, the SMF perspective argues for the adoption of techniques that may lead to the construction of new theories.

The alleged limitations of SMF seem to be outweighed by its potential benefits to the discipline. To reiterate, these benefits include: (1) encouraging both theoretical and methodological pluralism, thus minimizing the possibilities of conceptual myopia and biases in the choice of research methods; (2) furnishing standards of quality control for evaluating research programs and hopefully ensuring a steady advancement of marketing science; (3) suggesting methodological objectives that provide useful criteria for assessing present and potential research methods; and (4) providing a reconstruction of marketing science consistent with the contemporary structure of the discipline.

**Final Remarks**

In conclusion, the SMF framework is both descriptive and prescriptive. It is descriptive when applied to the rational reconstruction of marketing science. In so doing it is prescriptive, since it offers general standards for a maturing discipline. With the growing number of divergent philosophical views of marketing science, researchers in the discipline can now freely choose from a larger array of metatheoretical perspectives. However, just as with competing research programs, the selection of an appropriate metatheoretical perspective should be determined by its long-term problem-solving efficacy and capability of initiating inquiry into new areas. For while it is important for marketing researchers to disseminate their theoretical contributions to other scientific communities, it is their perceptions of what is and what is good for their discipline that ultimately affects day-to-day research.

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