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METATHEORY AND CONSUMER RESEARCH

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In the first section we will try to give the reader a preliminary understanding of the nature of theories. We will then examine, in a more rigorous way, the problem of defining theories. In the next section we will discuss the cognitive status of theories and in the sections following we will distinguish among different degrees of formalization of theories. The chapter will conclude with a comparison of models and theories. The next chapter presents a set of criteria for evaluating theories and applies these criteria to three major theories in the consumer behavior field.

THE NATURE OF THEORIES

The difference between theories and propositions is one of degree rather than of kind. As we move from empirical generalizations to nonobservational propositions a certain degree of systemicity develops, in the sense that we need auxiliary assumptions to test our nonobservational propositions directly and other nonobservational propositions to test them indirectly. Similarly, as our concepts evolve from operationally defined concepts through traits to theoretical concepts, a network is emerging that may bear the name "theory." Let us pursue this "network" analogy a little bit further in order to get an intuitive feeling for the structure of a theory. Hempel has given the classical account of the traditional view of this network:

A scientific theory might therefore be likened to a complex spatial network: its terms are represented by the knots, while the threads connecting the latter correspond, in part, to the definitions, and, in part, to the fundamental and derivative hypotheses included in the theory. The whole system floats, as it were, above the plane of observation and is anchored to it by rules of interpretation. These might be viewed as strings, which are not part of the network but link certain points of the latter with specific places in the plane of observation. By virtue of these interpretive connections, the network can function as a scientific theory: From certain observational data, we may ascend, via an interpretive string, to some point in the theoretical network, thence proceed, via definitions and hypotheses, to other points, from which another interpretive string permits a descent to the plane of observation.¹

Even though Hempel's account of a theory has not been spared from criticism by fellow philosophers of science,² it provides a convenient analogy. It integrates a number of metatheoretical concepts that we have been discussing in the preceding chapter. Figure 4.1 is a representation of this network, albeit in some modified form, and contains most of the discussed concepts. Next, let us suppose that we want to give a concrete example of a "minitheory" and see whether it can be represented in this way (see Figure

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² See, for example, Mary Hesse, "Is There an Independent Observation Language?"
4.2. We shall need two theoretical concepts, say "response" and "reward" (or "reinforcement"). The theoretical proposition relating the two concepts is "When a response is followed by a reward (or reinforcement), the frequency or probability of its recurrence increases." The attributes of the two concepts, which are the immediate constituents of this proposition, are "the probability of recurrence" as an attribute of "response" and the existence and time-index ("following" the response) of the reward. As correspondence rules we shall have the following (two) propositions: "brand purchase is a response," "satisfaction with brand is a reward." Next, we can define "brand purchase" and "satisfaction with brand" operationally. For the first one, we may say, "entry in a purchase diary," or "a consumer putting brand X into his shopping bag at the checkout counter." "Satisfaction with brand" may be defined operationally as follows: "Check 'very satisfied' for the question 'Are you satisfied with brand X?' on a questionnaire." We have given two operational definitions of brand purchase. Consequently, we really have two correspondence rules for this concept, namely, "brand purchase 1 is response" and "brand purchase 2 is response." Some of the relatively observational concepts in our system are: "entry," "purchase diary," "consumer," "putting," "brand," "shopping bag," "check," "question," and "questionnaire."

THE DEFINITION OF A THEORY

The term "theory" has been defined in various ways; Table 4.1 gives a set of fairly representative definitions. This table illustrates the idea that it is possible to look at theories from various points of view. First, they may be seen as conceptual systems. Second, the conceptual system is represented by a linguistic structure. First, from a conceptual point of view, theories can be considered as a set of propositions. We recall that, in turn, propositions were previously defined as interconnected concepts. Second, looking at theories as conceptual systems raises the question of the nature of the medium. In other words, how shall the concepts be represented? Usually, one is "inclined to reserve the term 'theory' for more discursive utterances, and particularly for those which can be put into propositional or bookish form."\(^3\)

Consequently, from a formal point of view, a theory may also be considered as a set of sentences.

The duality of the nature of a theory (viewed either as a set of propositions or as a set of statements) explain most of the differences found in the definitions listed in Table 4.1. Some authors (Hempel and Galtung, for example) emphasize the formal aspect of theories by defining them as sets of statements and sentences, whereas others (Bunge, Achinstein, and De Groot,

Table 4.1 Definitions of Theory

Achinstein: “T is a theory, relative to the context, if and only if T is a set of propositions that (depending on the context) is (was, might have been, and so forth) not known to be true or to be false but believed to be somewhat plausible, potentially explanatory, relatively fundamental, and somewhat integrated.”

Brodbeck: “A deductively connected set of laws.”

Hempel: “A scientific theory may be considered as a set of sentences expressed in terms of a specific vocabulary.”

Bunge: “Theory designates a system of hypotheses.”

“A set of scientific hypotheses is a scientific theory if and only if it refers to a given factual subject matter and every member of the set is either an initial assumption (axiom, subsidiary assumption, or datum) or a logical consequence of one or more initial assumptions.”

Rudner: “A theory is a systematically related set of statements, including some lawlike generalizations, that is empirically testable.”

Labovitz and Hagedorn: “A scientific theory: a set of interrelated propositions that comprise a deductive system.”

Galtung: “Theory, T, is a structure (H, I) where H is a set of hypotheses and I is a relation in H called ‘implication’ or ‘deducibility’ so that H is weakly connected by I.”

De Groot: A theory is “a system of logically interrelated, specifically noncontradictory, statements, ideas, and concepts relating to an area of reality, formulated in such a way that testable hypotheses can be derived from them.”

Nagel: “The distinction between experimental laws and theories is based on the contention that laws subsumed under the first of these labels, unlike the laws falling under the second one, formulate relations between observable (or experimentally determinable) traits of some subject matter.”

Caws: “A theory is a set of universal propositions asserted by means of a corresponding set of universal sentences.”

The Definition of a Theory

For example) stress more their semantical aspects. In the remainder of this chapter we will try to put an equal emphasis on both aspects and consider interchangeably a theory as a set of propositions.

Let us address ourselves more explicitly to the question of what the constitutive characteristics of a theory are. Four criteria are generally thought to be necessary.

**CRITERION 1: THERE MUST BE MORE THAN ONE PROPOSITION (SENTENCE)**

The use of the term “set” in some of the definitions implies that a theory is composed of more than one proposition. The limitation of this criterion should be obvious to the reader, for it is always possible to combine propositions. Thus, the adopting of the “number of propositions” — the criterion — results in calling essentially the same conceptual system a proposition in one case and a theory in the other case, the only difference being the syntactical “phrasing” of the system. We must realize that syntactical manipulations can transform our “theory” into a “proposition” and vice versa. As an example, consider the following “proposition”:

\[ y = f(x, z, w) \]

Where \( Y \) is defined as consumer behavior, \( x \) as affective, \( z \) as cognitive predisposition, and \( w \) as behavioral intention. This “proposition” can now be easily transformed into a “theory” by simply decomposing it into

\[ y = g(v) \]
\[ v = h(x, z, w) \]

**CRITERION 2: THE EXISTENCE OF NONOBSERVATIONAL PROPOSITIONS**

If we accept the idea that theories are sets of propositions, we must specify whether we mean any type of proposition or rather certain types. These propositions are of various types. As indicated in Chapter 3, there are analytic and synthetic propositions. The analytic propositions are represented by the operational (nominal) definitions of the variables. Among the synthetic propositions, theories comprise empirical generalizations, correspondence rules, and nonobservational propositions. Which of these components are necessary in order for a system of propositions to qualify as a theory? Generally speaking, it is stated that a theory should contain nonobservational propositions. This view is however not entirely uncontested. Rudner, for example, stipulates only “lawlike generalizations,” which, even though he
does not define them, are generally what we called “empirical generalizations” with a satisfactory degree of corroboration—that is, “laws.” Nagel, on the other hand, makes a fundamental distinction between theories and what he calls “experimental laws.” Bunge, somewhat more tolerant than Nagel, does not make the existence of nonobservational propositions a sine qua non of theories. Nevertheless, he suggests different names for systems that contain nonobservational propositions and for those that do not. The latter he calls black-box theories. He characterizes black-box theories in the following way: “A black box theory treats its object or subject matter as if it were a system devoid of internal structure: it focuses on the system’s behavior and handles the system as a single unit. A black box theory will accordingly account for overall behavior in terms of relations among global variables such as net causes (inputs) and net effects (outputs); these will be mediated by referentless intervening variables.” Behavioral psychology can be considered as taking a black-box approach. Its adherents believe that “a science of behavior could be built up on the level of the gross observable reactions of organisms dealt with by the everyday language of action concepts. That is, functional relations could be discovered in which these gross reactions would be the dependent variables.” The parameters in the equations relating observable stimulus conditions and observable responses remain, in general, uninterpreted; that is, they are treated as intervening variables rather than as hypotetical constructs.

The treatment of buyer behavior in terms of Marshallian, Pavlovian, and other models is an example of black-box models. The application of Markov models to consumer behavior can also be seen as a black-box approach, for the transition probabilities are purely empirical concepts; that is, they are derived from the observations and are not hypothesized to refer to any real property for the consumers. More phenomenologically oriented approaches to consumer behavior, however, more or less posit the existence of some real referent for the parameters mediating between observable stimuli and observable responses. As an example, consider Levy’s discussion of some of consumers’ thoughts that mediate between a particular TV commercial and the response to it: “Women seem to feel that this commercial will convey to husband and children the rewards they are able to offer them, if they so desire.” Another indirect reference is derived from the emphasis respondents place on the originality of this presentation. They feel that the company wants to please and entertain them as well as sell the product. These two factors lead to good feelings toward the brand and the company. There can be no doubt that in such an analysis the intervening variables are treated not as convenient calculating devices to help summarize empirical data, but that they refer to real properties and events that take place in the consumer’s mind.

Bunge notes that black-box theories have the advantages of being highly general, wholistic, epistemologically simple, accurate, and safe. Their disadvantages include their low content, low testability, and low heuristic power.

CRITERION 3: DEDUCIBILITY

This dimension is a syntactical property of theories and is particularly stressed by Galtung, Labovitz and Hagedorn, Brodbeck, and Bunge. Note that it is not a property of a single proposition but of a set of propositions. It makes for the systematicity of the set. Systematicity is usually not achieved, and may not even be desirable, during the construction stage of theories. It is being promoted, however, during the reconstruction stage. “Reconstruction” of a theory consists of the “explicit and complete symbolic (nonverbal) formulation of the theory’s axioms and in the fullest possible statement, or else mention, of the theory’s presupposition and rules.” The attempt to systematize a given field will start with establishing hypotheses that have been proposed to account for them. For example, an attempt might be made to use Howard and Sheth’s theory to derive the empirical generalization reported in Engel, Kollat, and Blackwell’s review of consumer behavior research. Next, it should be possible to deduce a large number of empirical generalizations that have not yet been investigated. As an example, Copley and Calom deduced that the relationship between perceived risk and information search behavior in an industrial marketing setup should follow the Berlyne function, as suggested by Howard and Sheth, and proceeded to test their deduction. Similarly Bennett and Mandell tested implications of the Howard and Sheth theory for the pre-purchase information-seeking behavior of new-car purchasers. The deduction and confirmation of new propositions

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8 See Table 4.1.
10 Bunge, p. 509.
12 See K. MacCorquodale and P. E. Meehl, “On a Distinction between Hypothetical Constructs and Intervening Variables.”
16 See Table 4.1.
17 Rudner, Philosophy of Social Science, pp. 10-11.
19 Thomas P. Copley and Frank L. Callom, “Industrial Search Behavior and Perceived Risk.”
20 Peter D. Bennett and Robert M. Mandell, “Prepurchase Information-Seeking Behavior of New Car Purchasers—The Learning Hypothesis.”
increases the number of propositions that a theory encompasses. Thus, at
any given point in time, we can distinguish between the actual and the poten-
tial set of propositions of a theory. Historically speaking, a theory is then a
growing set of propositions.17

CRITERION 4: TESTABILITY IN PRINCIPLE

This is an epistemological characteristic of theories. A theory may be
syntactically valid and it may be meaningful (that is, it is an interpreted
rather than an abstract theory), but it may still lack empirical significance.
In addition to the rules of interpretation that are necessary to make an
abstract theory meaningful, correspondence rules are necessary to make it
empirically significant—that is, provide for testability. With the addition of
correspondence rules, a theory is likened to a network.18 In such a network
the knots represent the concepts and the threads connecting the latter represen-
t, in part, definitions, empirical generalizations, correspondence rules, and
hypotheses. This network floats above the realm of observation and touches
it only along the edges, which correspond to the operationally defined con-
cepts. Quine expresses this in the following way: "The totality of our so-called
knowledge or beliefs, from the most casual matters of geography and history
to the profoundest laws of atomic physics or even of pure mathematics and
logic, is a man-made fabric which impinges on experience only along the
edges."19

As an example of such a theoretical network, consider the partial theory
shown in Figure 4.3.20 "Purchase" and "search for information" refer to obser-
able behavior of consumers. Between "satisfaction," "brand compre-
rehension," and "attitude" the following relationships can be said to hold: If
the purchase of a brand is followed by satisfaction, then brand comprehen-
sion will change in the direction of the new information, and consequently
attitude will change. Furthermore, the more positive the attitude toward a
brand, the lesser the extent to which information concerning this brand will be
sought. If one wanted to test this hypothesis, observations of purchase
behavior and of information-seeking behavior would be required. In addition,
"satisfaction" would have to be operationally defined, and a correspon-
dence rule linking "satisfaction" and "satisfaction" would have to be
introduced and its validation attempted. Bennett and Mandell actually
attempted to test this hypothesis in two versions: (1) "As the total number
of reinforced purchases of a brand increases, the amount of information
seeking before purchase of that brand will decrease" and (2) "As the num-
ber of sequential reinforced purchases of a brand increases, the amount of
information seeking before purchase of that brand will decrease."21 Judging
from their presentation, however, they did not actually test these hypotheses
because nowhere do they discuss how they determined whether a purchase
was reinforced or not—that is, whether satisfaction was obtained after each
purchase or not. Consequently, their findings lend only support to the hy-
pothesis that as the number of purchases of a brand increases, the informa-
tion-seeking behavior concerning this brand will decrease regardless of
whether satisfaction was present or not. (Maybe their implicit assumption
was that, as the number of repeat purchases of a brand increased, it is likely
that the consumer is satisfied with the product, for he would not repeat his
purchases otherwise.)

Figure 4.3 Example of a theoretical network.

THE "COGNITIVE STATUS" OF THEORIES

The expression "cognitive status" of theories has been used by Nagel for
referring to the question of whether theories have real referents or not. These
questions arise primarily with respect to the theoretical concepts—that is,
those concepts that are nonobservable. There are three basic positions with
respect to this problem, namely reductionism, instrumentalism, and realism.
These three positions are briefly described in the following.

REDUCTIONISM

This position does not make any claims as to the existence of a real
referent. Moreover, since the existence of hypothetical entities and events is
uncertain, it may be better not to use them at all and to rely on what
supposedly is "real," namely the observational concepts that refer directly to
data. Consequently, it is required that all scientific statements should be
exhaustively translated into or reduced to observation statements.22 As an
example, a statement such as "if the brand proves to be more satisfactory
than the buyer expected, the attractiveness of the brand will be en-
hanced,"23 in order to be valid according to the reductionist doctrine, will

19 Willard V. O. Quine, From a Logical Point of View, p. 42.
20 This example follows John A. Howard and Jagdish N. Sheth, The Theory of Buyer
Behavior.
21 Bennett and Mandell, "Prepurchase Information-Seeking Behavior of New Car Pur-
chasers," p. 431.
23 Howard and Sheth, The Theory of Buyer Behavior, p. 475.
have to be translated into a statement containing only operationally defined concepts such as "the verbal response to a rating scale," "differences between verbal responses to a rating scale," and so forth.

Hesse mentions two principal arguments against the reductionist position:

First, it can be shown that in many existing theories such translation cannot in fact be carried out, and yet no reputable theorist wishes to abandon otherwise satisfactory theories on this ground alone. Second, and more fundamental, it has been demonstrated—that if explicit definitions of all theoretical terms by means of observables could be carried out, theories would be incapable of growth and therefore useless.24

To illustrate the second point, it would certainly be possible to develop standard operational definitions for the "hypothetical constructs" of the Howard-Sheth buyer behavior theory. The question is whether such a procedure is desirable. Lehmann, Farley, and Howard note in this respect that "until operational definitions are agreed upon, it will be very difficult to apply results of one study to another situation."25 This request overlooks the fact that it may not be possible to use the same operational definition in each context, and that today's standard is likely to be improved upon by advances both in theory and in measurement technology. Tying in the theory thus to a particular set of operational definitions would quickly lead to its obsolescence. In addition, one must take into account the fact that any singular measure of hypothetical constructs contains not only object but also method factors: "...the sense data or meter readings are now understood as the result of a transaction in which both the observer (a meter) and the object of investigation contribute to the form of the data."26 Consequently, rather than having one standard operational definition, multiple operationalizations of each theoretical concept are required.27

INSTRUMENTALISM

According to the instrumentalist position, theories are mere instruments, tools, or calculating devices. They constitute rules for the derivation of singular statements (explanations and predictions) from other singular statements (the initial conditions). For example, the singular statement "consumer A is more satisfied with brand X than he expected" can be "fed into" the theoretical statement that links brand satisfaction and brand attitude, as mentioned earlier. The singular statement "consumer A's attitude toward brand X has improved" results as a prediction. The theoretical concepts thus serve only to transform observation statements into different observation statements. The fact that one may use one and the same abstract theory to derive interpreted theories bearing upon widely divergent subject matters lends further plausibility to the instrumentalist position.

Hesse has advanced two arguments against the instrumentalist position.28 First of all, the analogy between tools and theories is not quite correct in that we demand specific, well-adapted tools for different purposes. In contrast with that, we do look for "universal theories." Although marketing practitioners would be quite satisfied with having useful rules for predicting the sales of toothpaste, of freeze-dried coffee, color TV sets, and so forth, researchers in marketing and other areas will always look for the common theory that would integrate a number of diverse phenomena. Hesse's second argument is that theories are (or should be) subject to falsification, and that those theories that are falsified are being discarded from the scientific scene even if they continue to be used in applications—for predictive purposes, for example. Kaplan mentions a third argument—namely, that there are instances when a purely theoretical entity, due to better instruments, becomes observable.29

REALISM

This is the third position concerning the cognitive status of theories. Its proponents contend that "theories consist of true or false statements referring to 'real' or 'existing' entities."30 This position has to contend with the problem of when one can say that something exists. Nagel discusses four criteria that are "commonly employed, whether explicitly or tacitly, when physical reality is either affirmed or denied of scientific objects."31

The first and most familiar criterion is that the thing or event be publicly perceived when suitable conditions for its observation are realized.32 This criterion covers concepts such as "information-seeking behavior," "a Ford Mustang," "a 30-second TV commercial" and so forth. It does not deal, however, with concepts such as "attitude," "motive," "perceived newness," and so forth.

A second criterion holds that "every nonlogical term of an assumed law (whether experimental or theoretical) designates something that is physically real, provided that the law is well supported by empirical evidence.

27 See Campbell, p. 331.
31 Nagel, The Structure of Science, p. 146.
and is generally accepted by the scientific community as likely to be true."\(^{32}\)

A third criterion is that "a term designating anything physically real must enter into more than one experimental law. . . . The rationale for this requirement is to characterize as physically real only things that can be identified in ways other than, and independently of, the procedures used to define those things."\(^{32}\) Campbell has dealt extensively with this criterion under the name of convergent validity.\(^{35}\)

A fourth criterion notes that "the real is that which is under some stipulated set of transformations, changes, projections, or perspectives. . . . Thus some writers base denied physical reality to immediate sensory qualities, since these vary with physical-physiological and even psychological conditions."\(^{34}\) It would seem that, for consumer behavior research, this is a variant of the preceding criterion of convergent validity. Observations by different researchers and/or instruments are correlated with each other and the agreement between the results supposedly represents those real properties that are invariant with respect to each observer's motives, biases, and so forth.

**DEGREE OF FORMALIZATION OF THEORIES**

Depending on the degree of formalization, it is possible to distinguish four main types of theoretical structures.\(^{35}\)

**DEDUCTIVELY COMPLETE THEORIES**

These theories possess a "completely formal structure with the axioms fully specified and all steps in the deductive elaboration fully stated."\(^{36}\) Within the social sciences, Hull's attempt to develop a hypothetico-deductive psychological theory can be cited as an example.

**SYSTEMATIC PRESUMPTIONS**

There are two major instances. (1) In the first instance (elliptic formulations), the theory contains formulations that presuppose a body of theory that itself is complete. For example, the use of probabilities presupposes probability theory. Every time an hypothesis is tested statistically a number of presuppositions are involved. They are not made explicit. (2) Whereas in the preceding instance the presuppositions referred to a fairly complete body of knowledge, in this case the area from which the presuppositions are derived is itself incomplete. This case would seem to occur extremely frequently in consumer behavior research. Every time the application of some psychological or sociological theory is proposed, the major presupposition seems to be that this theory is well adapted in the field of origin. Quite frequently, however, this is not the case. At best, the applied theory is one alternative among a set of equally plausible competing theories; at worst, the theory has been disconfirmed for the particular purpose for which it is being proposed in the applied area.

**QUASI-DEDUCTIVE THEORY**

There are three varieties of quasi- deductive theory. First, theories containing probabilistic statements are only quasi- deductive because inductive rather than deductive logic establishes the links among the statements. Secondly, certain steps in the deduction are left out for reasons of exposition or for other reasons. Third, there are theories relying on relative primitives. This means that no set of terms may be designated as the basic or the ineliminable set in favor of which all other terms may be eliminated.

**THEORETICAL ATTEMPTS**

There are two kinds of theoretical attempts. The first consists of systems that can, "without any substantial modification of concept or manipulation, be rendered at least partially into formal structure."\(^{37}\) Examples of such structures are Nicosia's and Howard and Sheth's models discussed in the next chapter. Both can be translated into formal structures, and the latter has already been formulated econometrically for testing purposes.\(^{28}\) The second variety of theoretical statements are those verbal systems that "cannot be even partially formalized without a substantial modification of the concepts used and clarification of the deductive relationships proposed."\(^{39}\) Most of the "theories" in consumer behavior research would seem to be of this kind.

**CONCATENATED THEORIES**

Kaplan proposes two types of theories, which also represent different degrees of formalization. The first type are concatenated theories. Such a theory is one "whose component laws enter into a network of relations so as to constitute an identifiable configuration or pattern. Most typically, they converge on some central point, each specifying one of the factors which

\(^{32}\) Nagel, p. 147.

\(^{33}\) Donald T. Campbell and D. W. Fiske, "Convergent and Discriminant Validation by the Multitrait-Multimethod Matrix."

\(^{34}\) Nagel, *The Structure of Science*, pp. 149–150.

\(^{35}\) The discussion here follows the exposition of David Harvey, *Explanation in Geography*, pp. 97–99.

\(^{36}\) Harvey, p. 97.
play a part in the phenomenon which the theory is to explain." Freudian theory is said to be of this type. For example, if one is attempting to explain a compulsive neurosis, "the theory tells us that compulsive behavior simultaneously provides substitute satisfactions for repressed desires . . . and guards against the arousal and/or satisfaction of the desire . . . Furthermore, the theory tells us what kinds of desires are most often repressed." Thus, the theory provides a pattern that suggests interpretations of particular cases. In the absence of laws specifying necessary and sufficient conditions, the theory points out plausible explanations, which can be narrowed down by the gathering of additional information. Consumer behavior, insofar as the explanation of individual behavior is concerned, would seem to be in a similar position. In order to explain a particular purchase decision there is no one set of variables nor particular law that helps us to explain it. Rather, a variety of concepts and laws that converge on this particular behavior have to be consulted. Addressing himself to those who expect to find a satisfactory explanation in terms of one set of variables (namely, personality variables), Kassarjian made the following pertinent comment: "... personality researchers in consumer behavior much too often ignore the many interrelated influences on the consumer decision process, ranging from price and packaging to availability, advertising, group influences, learned responses, and preferences of family members, in addition to personality. To expect the influence of personality variables to account for a large portion of the variance is most certainly asking too much." The theories by Nicosis and Howard and Sheth, with their comprehensive thrust, are attempts to comprise a large number of relevant concepts and relationships. They can thus be considered to be concatenated theories.

Concatenated theories would seem to follow primarily the intensive strategy for investigation. Its characteristic is that a partial explanation of a whole region is made more and more adequate." Consequently, its function is not to explain a limited subject matter, which is later on being enlarged (for example, to go from the explanation of chewing-gum brand choice to the explanation of food products and so forth), but to lay out "lines for subsequent theory and observation to follow, so as to yield a better understanding of the broad-scale phenomena which were their (the theories') primary concern." Thus, Howard and Sheth make a very explicit statement of their intention to explain brand-choice behavior in general, both in consumer and industrial contexts, and not only for a particular type of product or a particular type of behavior—for example, repetitive as innovative behavior.

40 Kaplan, The Conduct of Inquiry, p. 298.
43 Kaplan, The Conduct of Inquiry, p. 305.

HIERARCHICAL THEORIES

Kaplan's second category encompasses hierarchical theories, in which the "component laws are presented as deductions from a small set of basic principles." This type corresponds to what we have previously called deductively complete theories. For example, it is conceivable that Howard and Sheth's theory is deducible from some "master" psychological theory such as Hull's. This would mean that every relationship as proposed by Howard and Sheth can be shown to be a logical consequence of the basic principles. As a matter of fact, at the origin of this attempt lies such a derivation as can be seen from previous presentations by Howard.

MODEL

DEFINITION OF THE TERM "MODEL"

The term "model," similarly to the term "theory," shows a "melancholic lack of uniformity in the vocabulary of scientists and others who talk about science." It seems that there is only one common characteristic of the various usages. According to Kaplan, "we may say that any system $A$ is a model of system $B$ if the study of $A$ is useful for the understanding of $B$ without regard to any direct or indirect causal connection between $A$ and $B$." Hence, in most general terms, when there are at least two systems, one may function as a model of the other. The nature of either system does not matter; that is, it may be a physical, symbolic, conceptual, or real system. Consequently, the term "model" is not a one-place but a two-or-more-place predicate. In other words, it is meaningless to talk about a model without specifying to what other system(s) the model is to be related, just as it is meaningless to talk about leadership as a property of an individual.

Two notions are important with respect to models, namely isomorphism and analogy. Both terms designate relational properties between two or more systems. Analogy is the more general concept. It consists of formal and material analogy. Formal analogy is "analogy of structure or isomorphism between model and system, deriving from the fact that the same formal axiomatic and deductive relations connect individuals and predicates of both the system and its model." In more general terms, Kaplan says that for two systems to be isomorphic means that "whenever a relation holds between two elements of one system a corresponding relation holds between the corresponding elements of the other system." Material or substantive analogy refers to similarity between the individuals and predicates of the

44 Kaplan, p. 298.
45 John A. Howard, Marketing Theory.
46 Rudner, Philosophy of Social Science, p. 23.
47 Kaplan, The Conduct of Inquiry, p. 263.
49 Kaplan, The Conduct of Inquiry, p. 263.
two systems. Systems may have formal but no material analogy, or they may have both types of analogy. Material without formal analogy is unlikely. "It does not seem possible to conceive of a material analogy without some formal analogy; if there is material analogy, there is presumably some consequent structural similarity that could—at least in principle—be formalized." Material analogy is often used as the basis for inductions: "A simple generalization relating A and B is extended to cover cases of another kind, say C and D, because C is like A and D is like B." Experiments on rats are often called analog experiments. Because of material analogies between rats and humans certain stimulus-response patterns observed with rats are generalized to cover humans too.

MODELS AND THEORIES

The distinction between these two concepts is not very clear. Rudner, for example, complains that "sometimes the two are employed simply as synonyms, sometimes 'model' is used to refer to any theoretical formulation other than a theory." Simon is one of the authors to consider the two as synonymous: "In contemporary usage the term 'model' is, I think, simply a synonym for 'theory.'" Lachman, for example, argues that "it will be useful to distinguish the formal theory from the separate system which is the model. . . . The model, consisting of a separate system, brings to bear an external organization of ideas, laws, or relationships upon the hypothetical propositions of a theory or the phenomena it encompasses." In order to delineate the relationship between models and theories we should recall that the immediate components of theories are linguistic entities—that is, verbal or mathematical signs and their combinations. This would seem to rule out the existence of material or substantive analogy between a theory and any other system. Harré explains why this is the case: "Whatever may have been the source of the symbol, no likeness or unlikeness it may bear to its subject matter counts as a reason why it is a symbol for, or of. Any sign would do as well, provided a symbol convention had been agreed for it." Hence, if a theory stated in symbolic form were ever to serve as a model, it could only be in virtue of its structural analogy—that is, isomorphism—with some other system.

What are some of the systems to which a theory might stand in the relation of isomorphism? Before answering this question, we should make the distinction between abstract and interpreted theories.

A theory, if considered as a set of sentences, can be called semantically abstract if and only if none of its terms are interpreted or meaningful; semiastract if some but not all of the symbols are interpreted, and interpreted if they are all interpreted. One important characteristic of an abstract theory is that it "contains in seed an unlimited number of interpreted theories or models: abstract theories are generic by being uncommitted. In other words, a single abstract theory may underlie a number of specific (interpreted) theories; and once this is discovered formal derivations can be made once and for all for the entire set of interpreted theories having the same skeleton." Kaplan calls this abstracted system a "formal model, a model of a theory which presents the theory purely as a structure of uninterpreted models." On the other hand, consider that we start with an abstract theory. This is the case that has been extensively investigated by logicians: "Any set of entities that constitutes an interpretation of all the axioms and theorems of a system and in which those axioms and theorems hold true is called a model (in the logician's sense) of that system." Consequently, an interpreted theory (that is, an empirical theory) can be regarded as a model of an abstract theory. Kaplan calls this an "interpretive model, providing an interpretation for a formal theory." Remember also that "a simple abstract theory may underlie a number of specific (interpreted) theories." Consequently, there may be a multitude of interpretive models for a formal theory, and all of the interpretations are structurally analogous. Hence, one interpreted theory may be a model for another interpreted theory, and vice versa. Rudner expresses this as follows: "One of such a pair of isomorphic theories may be regarded as being a model of, or furnishing a model for, the other. Which is regarded as the model, and which the theory of primary concern, will not depend on any structural feature of the two theories, but merely on which subject matter we are primarily interested in." So far, we have looked at the isomorphism between a theory and some other linguistic system. A theory may however also be isomorphic to some nonlinguistic system. Kaplan describes this view: "The model is conceived as a structure of symbols interpreted in certain ways, and what it is a model of is the subject matter specified by the interpretation. Relations among the symbols are presumed to exhibit corresponding relations among the elements of the subject matter." In addition to the subject matter, a theory may also stand in a relation of analogy to some other physical system.

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51 Kaplan, The Conduct of Inquiry, p. 106.
52 Rudner, Philosophy of Social Science, p. 23.
53 H. A. Simon and A. Newell, "The Uses and Limitations of Models."
54 Ray Lachman, "The Model in Theory Construction."
Such systems have been called physical models or analogies. Kaplan gives the following examples: 

"...computer simulation of personality, or physical systems that model the economy or some part of it... Psychodrama (role playing) and operational gaming may also be regarded as the use of physical models whose components are acts and events as well as objects." Simons further illustrates the use of analogies in economies: "The idea that the flow of goods and money in an economy are somehow analogous to liquid flows is an old one. There now exists a hydraulic mechanism, the Moniac... one part of which is so arranged that when the level of the colored water in one tube is made to rise, the level in a second tube rises (ceteris paribus), but less than proportionately. I cannot 'state' this thing here, since its statement is not in words but in water. All I can give is a verbal (or mathematical) theory of the Moniac, which is, in turn, a hydraulic theory of the economy." Later on, he asserts that the "content of the theory embodied in the Moniac is identical with the content of the theory embodied in the corresponding set of Keynesian equations or the corresponding set of verbal statements." Figure 4.4 depicts the various systems with which a particular theory may enter into a model relationship. The tentative conclusion from the discussion of the theory vs. model problem is that the two concepts are quite compatible. A given system can be both a theory and a model at the same time, for it is a theory on the basis of its possession of certain characteristics (that is, testability, systemicity, and the presence of theoretical concepts), while it may be a model because of its relationship to other, similar systems.

Figure 4.4 Systems with which a particular theory may enter into a model relationship.

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65 Kaplan, p. 273.
67 Simon and Newell, p. 97.

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CHAPTER 5

EVALUATING THEORIES

INTRODUCTION

The knowledge of the properties of any theory (and more generally of any symbolic system) is essential to building it and to using it. For example, if a researcher sets out to create the theory of consumer behavior he must know, in advance, some of the properties that his final theory must have. On the other side, he must have adequate knowledge of the limitations of existing theories.
The researcher in marketing, when trying to evaluate a theory, is unavoidably confronted with two problems: (1) The literature concerning the evaluation of theories is pregnant with evaluation criteria. One author assembled a list of 70 criteria, which, by his estimation, was a conservative number. These criteria are shown in Table 5.1. Since it is not practical nor is it even desirable to pursue all 70 or more criteria, the researcher is confronted with a problem of selection. What properties are commonly suggested by scientists? To contribute to answering such questions is one aim of this chapter. (2) Having reduced the number of criteria to those that he, somewhat subjectively, considers most relevant, the researcher is still faced with the problem of ordering them. The selection and hierarchy suggested by Dodd will be found in Table 5.2.


| Table 5.1 Criteria of “Good” Theories as Induced from the Literature |
|----------------------------------|-----------------|----------------------------------|
| Accuracy                         | Generality      | Promise                          |
| Applicability                    | Growth          | Quantitativeness                  |
| Brevity                          | Importance      | Reliability                       |
| Brilliance                       | Inclusiveness   | Rigour                           |
| Clarity                          | Ingenuity       | Simplicity                        |
| Closure                          | Insight         | Stability                         |
| Coherence                        | Instrumentality | Standardization                  |
| Comprehensiveness                | Interrelatedness| Symmetry                         |
| Consistency                      | Integration     | Systematicness                   |
| Constancy                        | Invariance      | Timeliness                        |
| Control                          | Logicalness     | Time-binding                      |
| Correlatedness                   | Measurability   | Understandability                 |
| Correspondence                   | Objectivity     | Unity                            |
| Definiteness                     | Observability   | Ubiquity                         |
| Efficiency                       | Operationally   | Universality                      |
| Elegance                         | Order           | Univocality                       |
| Exactness                        | Organization    | Utility                          |
| Experimentability                | Parsimony       | Validity                         |
| Explanatory power                | Permanence      | Value for—                       |
| Familiarity                      | Plausibility    | Verifiability                     |
| Flexibility                      | Practicality    | Versatility                       |
| Frequency of use                 | Precision       | Wide acceptance                  |
| Fruitfulness                     | Predictivity    |                                 |
| Functionality                    | Probability     |                                 |


At this point the reader must be sensitive to the fact that, depending upon his background and objectives, the researcher will emphasize different aspects of the theory. A philosopher of science will certainly put the emphasis on such properties as logicalness, consistency, rigor, validity; a mathematician, on axiomatization, generality, quantitativeness, precision; a statistician, on predictivity, representativeness, standardization; a social scientist, on insight, explanatory power, experimentability, predictivity, objectivity; a practitioner, on applicability, familiarity, flexibility, fruitfulness, practicality, utility; and so forth. Consequently, it is our contention that there is no "absolute" and "perfect" hierarchy of evaluation criteria. Therefore the reader should not expect to find in this chapter the scientific way of assessing theories. All hierarchies should be understood as being tentative and highly dependent upon the context. Our observation can be understood as a corollary of the belief held by most philosophers of science and social scientists that there is a myth of the scientific method.

As a result of these two observations we will merely "suggest" in the first part of this chapter a set of criteria that we found relevant and that we hope to be of some help to our readers. In the second part of this chapter we will apply our set of evaluation criteria to three major models of consumer behavior.

The discussion borrows part of its comprehensive schema from Bunge. 2

We distinguish among four kinds of criteria, namely, formal, semantical, epistemological, and methodological. These criteria are discussed in detail on the following pages.

FORMAL CRITERIA

"WELL-FORMEDNESS"

The theoretical statements should be well formed. "Well-formed" is the term used by Bunge to convey the idea that the propositions contained

in the theory and the ways they are interconnected should conform to (1) some rules of "composition" or formation (we have already stressed in Chapter 3 that some combinations of linguistic signs are not permitted) and (2) some rules of "transformation" that correspond to what is required by elementary logic or more complex syntax. Such a criterion is generally left aside by most philosophers because of its triviality and consequently should be considered as a sine qua non condition for any theory that purports to be communicated to others.

INTERNAL CONSISTENCY

A theory is internally consistent if and only if no logical contradictions are contained therein. This is an absolute requirement that is stressed by all scientists. It goes beyond the requirement of "well-formedness" in the sense that a theory can be "well formed" and can nevertheless contain contradictions. As an example, consider the perception of innovators in Rogers' theory. From his generalizations one can derive the proposition that "opinion leaders are perceived and perceive themselves as deviants." This, however, is in direct contradiction with another of his generalizations: "Opinion leaders conform more closely to social system norms than the average member." Among the building blocks of theories. A usable theory has at least one so-called primitive concept and at least one primitive assumption (or axiom). It is important that primitive concepts be mutually independent; that is, should we decide to assign definitions to each, the definition given one is unaffected by the definition given the other. It is also important that the theory have axiom independence: "An axiom set is independent if and only if its members are not interdeducible, i.e., if none of them is derivable from the others (even though it may turn out to be a theorem in a different theory)." For example, in social exchange theories the concept of utility or satisfaction is independent of the assumption of rationality and purposive behavior. The primitive concept and the assumption are certainly consistent with each other and would remain consistent through various formulations. In effect, the marketing man should ask whether the underlying assumptions and stated concepts are mutually independent.

STRENGTH

The property of "strength" is also designated in the literature by the terms of "formal comprehensiveness" or "generality." Of two rival hypotheses both consistent with the same set of data, the stronger one will be the more general of the two. This formal property can be viewed as associated with a semantical property of "representativeness" (see below) in the sense that the more general hypothesis is more likely to correspond to a broader semantical domain; in other words, a theory containing a higher number of variables and sentences is more likely to cover a broader range of referents. Dodd also speaks of this. "The more comprehensive or general a [theory] is, the more the [theorist] gains power over symbols of lesser coverage or generality." Among the building blocks of theories. A usable theory has at least one so-called primitive concept and at least one primitive assumption (or axiom). It is important that primitive concepts be mutually independent; that is, should we decide to assign definitions to each, the definition given one is unaffected by the definition given the other. It is also important that the theory have axiom independence: "An axiom set is independent if and only if its members are not interdeducible, i.e., if none of them is derivable from the others (even though it may turn out to be a theorem in a different theory)." For example, in social exchange theories the concept of utility or satisfaction is independent of the assumption of rationality and purposive behavior. The primitive concept and the assumption are certainly consistent with each other and would remain consistent through various formulations. In effect, the marketing man should ask whether the underlying assumptions and stated concepts are mutually independent.

SEMANTIC CRITERIA

LINGUISTIC EXACTNESS

As discussed previously, every concept has an "intension" or connotation and virtually always has at least one "extension" or denotation. The intension of a concept consists of those properties subsumed and synthesized by the concept. The intension of the variable concept "social class" consists of the cluster of variables—for example, education, occupation, and so on—we have in mind when we use the term "social class." The extension of a concept is the applicable domain or set of objects to which the concept can apply. A theory is linguistically inexact when its concepts and/or the relationships among the concepts are vague. Intentional vagueness is due to the partial

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4 Everett M. Rogers, Diffusion of Innovations.
5 Rogers, pp. 313-314.
7 The reader is referred to the discussion of the degree of formalization of theories (Chapter 4).
indefiniteness of the intension whereas extensional vagueness is due to a partial indetermination of the extension of a concept. If a concept is intensionally vague it may still be extensionally definite, whereas if a concept is extensionally vague then it is necessarily intensionally vague. The dimension of linguistic exactness is suggestive of Dodd’s criterion of accuracy. The exactness or precision of a theory in describing, explaining, and predicting is very important, particularly where intervention is an important factor or goal. The more accurate a marketer is in anticipating some event (for example, the percentage of persons of a particular nature purchasing a given product brand over a specified range of time), the more successful he will be in formulating and implementing his marketing strategy.

CONCEPTUAL UNITY

Conceptual unity is especially important when taking an interdisciplinary approach or evaluating interdisciplinary hypotheses and theories. There are several requisite conditions to the achievement of conceptual unity. The principle of these conditions will be discussed here. In evaluating a particular learning theory, role theory, or any other theory, the marketing researcher should ask whether the components of the theory refer to the same set of behavioral phenomena. This is an especially important consideration in marketing because of the laudable, but precarious, tendencies of marketing researchers to take interdisciplinary approaches to marketing problems. When combining sociological propositions and economic propositions (for instance, to develop a theory explaining reactions to a real or expected change in income), care should be taken that the respective social and economic concepts refer to the same set of phenomena—that they have intensional and extensional compatibility with one another and that they are rooted in identical or at least compatible assumptions. The interdisciplinary approach so common in consumer behavior research increases the opportunity for mismatching along these lines. Care must be exercised in assuring compatibility between the nonmarketing context in which a concept or theory has been empirically tested and the marketing context in which it is to be applied. The more disparate the contexts are, the greater the likelihood that different theories are involved.

EMPIRICAL INTERPRETABILITY

Empirical interpretability is what is referred to elsewhere in this book as “testability in principle.” There appears to be, in Blalock’s words, “an inherent gap between the languages of theory and research which can never be bridged in a completely satisfactory way.” The distinction between the theoretical concept and its referent on the one hand and the operational definition used in an empirical test on the other hand is a crucial one to make in marketing.

Dodd believes this criterion to be the chief criterion of a good theory. It concerns the closeness of correspondence between the symbol and its referent. Closely related is another concept of Dodd’s, univocability. This involves a one-to-one correspondence of symbols to referents. It is the name of the ideal semantic relation of “one symbol, one referent.” The fewer the number of different referents a given symbol within a theory brings within its scope the better that aspect of the theory is.

REPRESENTATIVENESS

The criterion of “representativeness” here refers to the scope of the black box. A good illustration is given by Lazarsfeld’s distinction between the distributive and the morphological approaches. The distributive approach used a “big” black box with variables—such as price, distribution, and others—as inputs and purchase decisions as outputs. The morphological or “decision-process” approach goes inside the black box and splits it up into several small related ones.

Representativeness is very similar to the criterion of depth. Depth refers to the basicness of the mechanisms involved in a theory. It is usually said, for instance, that Skinnerian psychology is deeper than Pavlovian psychology and Darwin’s theory of evolution is deeper than pre-Darwinian evolution theories. There are many dimensions and special conditions attached to this evaluative criterion. It must suffice here to say that the higher the level of abstraction, the more the basic units are mechanistically related; and the more the theory subsumes other theories, the better it is.

METODOLOGICAL CRITERIA

FALSIFIABILITY

Falsifiability is a means of evaluating the truth of a theory and/or theoretical statements. The empirical test does not obtain or create truth, it merely increases or diminishes the credence we give to an existing theory or statement. The more empirically testable (that is, open or sensitive to experience) an hypothesis is, the more falsifiable it is. The optimal condition

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11 Blalock, p. 98.  
15 Hubert M. Blalock, Jr., Causal Inferences in Nonexperimental Research, p. 5.  
16 See Gerald Zaltman, “Marketing Inference in the Behavioral Sciences.” A good treatment of this problem is to be found in John A. Howard and Jagdish N. Sheth, The Theory of Buyer Behavior.  
of falsifiability occurs when a theory has the possibility of being both confirmed and refuted by the results. This is to say, both favorable and unfavorable evidence can be conceived. The falsifiability of a theory is obviously highly dependent upon other attributes, such as interpretability, linguistic exactness, and representativeness.

On this same point Gaugn and Roberto note that generally as one cuts closer and closer to the core of a theory it becomes increasingly difficult to test the core hypotheses and assumptions because of their higher order of abstraction.20 The more readily this problem is overcome the better the theory.” However, it must be pointed out that the inability to test higher-order hypotheses may be a function of the investigators’ imagination and not necessarily a “fault” of the theory itself.

METHODOLOGICAL SIMPLICITY

Tests of a theory should not be so complicated or expensive as to make refutation impossible. This is related to Pinson and Roberto’s treatment of pragmatism as simplicity of understanding and simplicity of application.21 Simplicity of understanding is dependent upon what is sometimes conceptualized as syntactical simplicity.21 One theory may be syntactically simpler than another. For example, it may involve fewer concepts and propositions. Simplicity of understanding is also dependent upon what is occasionally called ontological simplicity. Thus Wallace adds: “If one theory deals with a more complex explanandum than another theory, we should naturally expect the former to be more complex than the latter. But the requirement that even the former theory should nevertheless be ‘parsimonious’ means that it should be free of redundancy; that is, it should be simple, relative to other possible theories accounting for the same explanandum. If the theory, in short, could do as well or better without a given element of form or content, that element is an unnecessary complexity and, according to the rule of simpler theories are somehow better theories than more complex theories: parsimony, should be discarded.”22 It is difficult to accept the argument that “The progress of science is not always in the direction of the simpler theory.”22 Only when the simpler theory provides the same power of explanation as a more complex theory or more complex formulation of the same theory is it to be preferred. Kaplan summarizes our position quite well in quoting Whitehead: “Seek simplicity and distrust it.”23

21 The reader will find a presentation of three kinds of simplicity (syntactical, semantical, and pragmatistic simplicities) with the corresponding available measures in: Christian Pinson and Eduardo Roberto, “Simplicity, Parsimony, and Model Building.”

EPISTEMOLOGICAL CRITERIA

CONFIRMATION

A theory is generally said to be true when it has been confirmed or corroborated. The degree of corroboration concerns “measuring the closeness of [the] correspondence of a theory to the facts which it is meant to describe, explain, and predict. It is statistically it is represented by the coefficient of determination.”24 The reader should be sensitive to two important points offered by Gaugn relating to theory evaluation. First is the principle of independent confirmation: “The only way to obtain complete confirmation of [a theory] is to confirm independently all hypotheses in [the theory].”25 Second, the principle of coexistence: “One does not have to choose between two or more noncontradictory theories from which the same set of hypotheses can be deduced.”26 At this juncture we should note the correspondence theory of truth. According to this theory, to say that a theory is true or false is “to say that it coheres or fails to cohere with a system of other statements; that it is a member of a system whose elements are related to each other by ties of logical implication as the elements in a system of pure mathematics are related.”27 Quine describes the consequences of this coherence law for the case when a proposition derived from a theory conflicts with observation. Using the network analogy, he argues that:

Total science is like a field of force whose boundary conditions are experience. A conflict with experience at the periphery occasions readjustments in the interior of the field. Truth values have to be redistributed over some of our statements. Reevaluation of some statements entails reevaluation of others, because of their logical interconnections—the logical laws being in turn simply certain further statements of the system, certain further elements of the field. Having reevaluated one statement, we must reevaluate some others, which may be statements logically connected with the first or may be the statements of logical connections themselves. But the total field is so undetermined by its boundary conditions, experience, that there is much latitude of choice as to what statements to reevaluate in the light of any simple contrary experience. No particular experiences are linked with any particular statements in the interior of the field, except indirectly through considerations of equilibrium affecting the field as a whole.28

Cronbach and Meehl discuss the choices of an investigator whose data do not bear out his prediction. He has three possible interpretations.29 First,

26 Gaugn, p. 456.
28 W. V. O. Quine, From a Logical Point of View, pp. 42–43.
the operational definitions do not properly reflect the concepts under investigation. For example, if Bennett and Mandell’s data had not been in conformance with the hypotheses, they still would not have been invalidated for they did not actually measure the construct under investigation—that is, reinforced purchases—but rather purchases only.50

A second possibility is that the theory that generated the prediction is incorrect. Bennett and Mandell tested a third hypothesis in their study, which said that “the buying experience itself is instructive, whether or not the choice is positively reinforced. As this experience increases, evidenced by the total purchases in the individual’s history, the amount of effort expended on information search will decrease.”51 The result obtained did not confirm the prediction and thus “tends to deny the notion in the Howard-Sheth theory that all experience is instructive and reduces the need for information seeking.”52 The authors did not discuss the consequences of this negative result for the theory. One would have to find out what the position of the generating hypothesis in the theoretical network is and what the consequences of this negative finding for the rest of the network are. If the generating hypothesis were at the boundary of the network, it could be eliminated without much effect on the remainder. If it came from the core of the theory, an effort at adjustment would probably take place. For example, the network could be modified by splitting a concept into two or more portions, or additional conditions modifying the original relationships could be added.53 Consider, for instance, the notion of congruity. Hughes and Guerrero propose to resolve difficulties with the congruity model in brand-purchase behavior by distinguishing between social-congruity and self-congruity.54 In addition, they indicate conditions under which each concept may be more relevant: “Perhaps social-congruity models should be considered for products consumed in public and self-congruity models for products consumed privately.”55 Thus they do not reject the notion of congruity and the underlying theoretical network. Instead, they modify and elaborate it. A similar approach was taken by Copley and Callom, who tested the function in an industrial marketing setting.56 In order to account for their data they proposed three types of risk and search behaviors, namely the “search simplifiers,” the “search norms,” and “the searchers: mirror-image groups.” Whenever such a modification of

50 Peter D. Bennett and Robert M. Mandell, “Prepurchase Information-Seeking Behavior of New Car Purchasers—The Learning Hypothesis.”
51 Bennett and Mandell, p. 431.
52 Bennett and Mandell, p. 432.
54 David G. Hughes and Jose L. Guerrero, “Automobile Self-Congruity Models Reexamined.”
55 Hughes and Guerrero, p. 125.
56 Thomas P. Copley and Frank L. Callom, “Industrial Search Behavior and Perceived Risk.”

the theoretical network is proposed, according to Cronbach and Mechl, the investigator is now “required to gather a fresh body of data to test the altered hypotheses. If the new data are consistent with the modified network he is free from fear that his nomologicals were gerrymandered to fit the peculiarities of his first sample. He can now trust his test to some extent because his test results behave as predicted.”57

Another possibility for dealing with disconfirmed predictions is to claim that the experimental design did not test the hypothesis properly. Maybe the manipulation of dissonance was not strong enough, maybe there were disturbing background factors; and so on. Raymond Bauer gives an example of this strategy in discussing a study undertaken “to see if one could differentiate ‘problem solving’ and ‘psycho-social’ situations and if the two different patterns of relationship (between self-confidence and persuasibility) would be found under the two conditions. The support for the main proposition was weak, but in my opinion the reason was a technical one: we were not sufficiently ingenious to create the proper differentiation between the two situations.”58

ORIGINALITY

Theories that force one to be creative in formulating problems and constructing empirical tests may yield a richness in new predictions and new syntheses not possible with mundane theories. Thus another major aim of theory construction is “to increase knowledge by deriving new propositions (e.g., predictions) from premises in conjunction with relevant information.”59 The opportunities for the use of original theories in a marketing context seem especially great. A considerable competitive advantage may accrue to the marketer who successfully exploits original theories.

EXTERNAL CONSISTENCY

A theory should be compatible with a sizable segment of existing tested knowledge in other fields as well as its own.60 Theories of consumer behavior should be compatible with such theories as learning theory or role theory, for example, as they are developed in marketing and nonmarketing contexts. However, caution is important here. External inconsistency is not a sufficient and immediate reason for rejecting a theory. It may well be the case that the other previously established theories need correction or modification. For example, one methodologically sound study attempted to replicate, in part, the classic two-step flow of communication notation and related ideas
put forth by Katz and Lazarsfeld.\(^{41}\) The study results not only failed to confirm the validity of the work of Katz and Lazarsfeld but contradicted it. Because of the basic scientific merit of the study one cannot reject it as the result of poor methodology and because of the consistent contradiction of the Katz and Lazarsfeld work throughout this study it cannot be conveniently dismissed as simply a random occurrence. The lack of external consistency in this case suggests modification of the previously established related theories.

Kaplan has called external consistency the norm of coherence.\(^{42}\) This norm involves how well a theory fits in with other theories and with known facts—that is, how well integrated it is with other knowledge. Kaplan points out that there is a very real danger of overemphasizing this norm: “Coherence is a conservative principle. . . . The unyielding insistence that every new theory must fit those theories already established is characteristic of closed systems of thought, not of science.”\(^{43}\) Nevertheless, the validation of theories does involve considering it in relation to other theories. A theory of a phenomenon consistent with another related, well-established theory has greater validity than a theory inconsistent with the other established, related theory, other things being equal. The other related theory, in effect, “lends” validity.

**UNIFYING POWER**

The criterion of unifying power refers to the ability of a theory to extend to areas previously unrelated.\(^{44}\) Utility theory, for example, originating in economics has been fruitfully extended to political science, sociology, and psychology. A theory that brings together a wide range of previously unconnected and confirmed propositions concerning a variety of phenomena can be considered a “good” theory. As Kaplan puts it: “What counts is the range of facts that the theory takes into account and especially their heterogeneity.”\(^{45}\) Thus one of the major aims of scientific theorizing should be to “systematize knowledge by establishing logical relations among previously disconnected items.”\(^{46}\)

**HEURISTIC POWER**

A good theory should have a high potential for suggesting and directing new research. It should help structure new learning opportunities for the researcher, “either (a) by posing or reformulating fruitful problems, or (b) by suggesting the gathering of new data which would be unthinkable without the theory, or (c) by suggesting entire new lines of investigation.”\(^{47}\) This is a very pragmatic dimension, which concerns the number and nature of questions a theory raises. Does a theory raise new important questions? If so, to what extent?

Dodd speaks of this as multipliability, which concerns the fruitfulness of a theory in leading to further theory—that is, its ability to multiply itself and increase. Does it result in any efforts to build new theories in areas where none existed before? Does it suggest more plausible theories for those situations already covered by one or more theories? For measurement, “a weighted score based on the number of further theories developed from a theory at issue or modified by it as cited in a relevant set of journals and textbooks in a period . . .”\(^{48}\)

**STABILITY**

A theory should not be rigid or inelastic in the face of evidence it did not predict.\(^{49}\) It should have a degree of flexibility that makes it possible to amend the theory to encompass the new evidence so long as the evidence is not in contradiction to the main body of the theory. The theory must be dynamic, not static.

Table 5.3 summarizes and conveniently represents the preceding discussion of the 16 criteria for theory evaluation.

**AN EVALUATION OF THREE MAJOR CONSUMER BEHAVIOR MODELS**

In the following section we shall evaluate three models or theories of buyer behavior, which have come to dominate the consumer behavior area, at least in terms of popularity or citation frequency. The evaluation of each model is in terms of the 16 criteria previously suggested. In all instances the discussion assumes that the reader is familiar with the model under consideration.

One observation must be made. The evaluative criteria are, for the most part, stringent. There does not exist in the behavioral sciences a meaningful theory of at least modest comprehensiveness that fully satisfies even most of the important theory evaluation criteria. Moreover, as we soon learned, different individuals may evaluate differently the degree of success with which a given theory satisfies a particular evaluation criterion. Accordingly, it requires no substantial effort to find things “wrong” with a theory or model. Critique is always easier than development.

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\(^{41}\) ATV House, *Opinion Leaders, A Study in Communication*.


\(^{44}\) Kaplan, *The Conduct of Inquiry*, p. 313.


\(^{46}\) See Bunge, p. 353.


Table 5.3 16 Criteria for Theory Evaluation*

**Formal Criteria**

1. **Well-formedness**
   - The theory obeys the rules of "formation" and "transformation" (elementary logic).

2. **Internal consistency**
   - The theory contains no logical contradictions.

3. **Independence**
   - The theory has primitive-concepts independence and axioms independence.

4. **Strength**
   - The theory entails other theories.

**Semantical Criteria**

5. **Linguistic exactness**
   - The theory exhibits minimum intensional and extensional vagueness.

6. **Conceptual unity**
   - The components of the theory refer to the same set of behavioral phenomena.

7. **Empirical interpretability**
   - The theory is operationalizable (interpretable in empirical terms).

8. **Representativeness**
   - The theory deals with deep mechanisms.

**Methodological Criteria**

9. **Falsifiability**
   - The theory is falsifiable—that is, confrontable with reality (facts).

10. **Methodological simplicity**
    - The theory is easy to build and test.

**Epistemological Criteria**

11. **Confirmation**
    - The theory coheres with facts.

12. **Originality**
    - The theory increases knowledge by deriving new propositions.

13. **External consistency**
    - The theory is consistent with existing knowledge.

14. **Unifying power**
    - The theory connects previously unconnected items.

15. **Heuristic power**
    - The theory suggests new directions for research.

16. **Stability**
    - The theory is able to accommodate new evidence.

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*This table is based largely on Bunge, Scientific Research, Vols. 1 and II.

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**THE NICOSIA MODEL OF CONSUMER DECISION PROCESSES**

The Nicosia model is represented in Figure 5.1.

**Formal properties**

**Well-formedness**

- Such a criterion is irrelevant in this context since any published model must be at least syntactically correct.

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**Internal Consistency**

Internal formal consistency is an absolute logical condition for every scientific model. Indeed Nicosia's model meets this requirement.

**Independence**

It has been previously said that such a criterion is not very relevant in the context of consumer behavior models. Nicosia's model as well as the two other models cannot claim to be axiomatic. However, we recall that a theory is said to be formalized if "it contains an explicit and exhaustive enumeration of its primitives and its rules (both syntactical and semantical)."50 With respect to this point it must be said that Nicosia is remarkable.51 Throughout the book there is a constant concern for defining the primitive terms,52 the basic assumptions of each approach to consumer behavior,53 and finally the postulates underlying the "comprehensive scheme"54 and the different "illustrative" models of consumer behavior process.55

**Strength**

The coverage of the model is very broad. However, Nicosia's model cannot be said to be able to entail other existing models. They are too different in their selection and treatment of dependent, independent, and mediating variables even if they purport to deal with an apparently similar phenomenon. In order to determine whether each of the three theories can be formally derived from one or both of the others it should be necessary to formalize them using a uniform terminology.

**Semantical properties**

**Linguistic Exactness**

With respect to this point Nicosia's model exhibits minimal ambiguity and vagueness; most of the variables and relationships are clearly defined.

**Conceptual Unity**

Because of the central role played by the concept of the decision-making process in the building of the model there is, through-

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* Nicosia has attempted a formalization of his model through the use of derived models. This would allow the researcher to take account of a new property, namely, that of "syntactical simplicity." It must be mentioned that a measure of syntactical simplicity is available not for the "comprehensive model" but for one of the derived models expressed by the following equation (Nicosia, Consumer Decision Processes, p. 126):

\[
\frac{d^2B(t)}{dt^2} + (a + bB) \frac{dB(t)}{dt} + (db - m)abB = mbC
\]

This model yields by Harré's index a syntactical simplicity coefficient of 4. (This example is treated in Pinson and Roberto, "Simplicity, Parsimony, and Model Building.")

* Nicosia, Consumer Decision Processes, p. 20.
* Nicosia, pp. 75ff; pp. 57ff.
* Nicosia, pp. 153ff.
* Nicosia, pp. 197–198, 208–221.
Figure 5.1  The Nicosia model of consumer decision processes.

1.1. Organizational attributes of the firm marketing and advertising brand x

1.2. Attributes of brand x

1.3. Environmental factors

1.4. Attributes of media (available; chosen)

1.5. Attributes of message (available; chosen)

1.6. Consumer's attributes

1.7. 1. Encoding

1.7. 2. Transmission

1.8. Exposure

1.9. Exposure

1.10. Environment, esp. at time of transmission

1.11. Consumer's attributes (esp. predisposition toward x)

1.12. 1. Physical

1.12. 2. Cognitive

1.13. 1. Message lost

1.13. 2. Message stored

1.13. 3. Message relevant (attitude toward brand x)

II. 2.2. External

II. 2.1. Internal

II. 2. Search

II. 2.2. Evaluation of means-end (s)

II. 3. Internal

II. 3. Outcomes

II. 3.1. Halt

II. 3.2. Motivation toward x

II. 3.3. Revises

II. 4. Outcomes

II. 4.1. Halt

II. 4.2. Motivation toward x

111. 1. In-store factors

111. 2. Objective reality

111. 3. Past purchases

111. 4. Past purchases

III. 1. Consumer's attributes (esp. motivation toward x)

III. 5. Decision (over act of choice)

111. 6. Outcomes

111. 6. 1. Halt

111. 6. 2. Motivations

111. 6. 3. Purchase of x

IV. 1. Firm marketing and advertising brand x

IV. 2. Other firms (see 1.3)

IV. 3. Environment

IV. 4. Consumer's attributes (esp. ownership of x)

IV. 5. Storage and consumption

IV. 6. Outcomes

Motivation

Attitude

Predispositions

IV. 6. Outcomes

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out the book, a constant reference to the same universe of discourse. It should also be of interest to note that all the variables that were introduced seem to fulfill a necessary need: by necessary need we mean that they are not introduced opportunistically after the theory has already been formulated. (Some researchers have the bad habit of introducing new variables whose only function is to "protect" the previously introduced ones.)

**Empirical Interpretability** Because of its low level of abstraction, Nicosia's model raises fewer problems of interpretability than its competitors do; most of the variables included in his model are observables.

**Representativeness** Nicosia's model aims at developing "explanations of why the consumer behaves the way he does."56 One major advantage of this model over, for example, the ones of Howard and Sheth and of Engel, Kollat, and Blackwell is that it includes more marketing variables and treats them more in detail. Another favorable point is that, in spite of what was thought by some authors,57 Nicosia postulates a marketing setting which is more realistic, in the sense that his model primarily stresses the interactions between the firm and the consumer instead of focusing on the consumer alone. However it remains true that the model gives integrated and thus idealized views of marketing and advertising problems rather than entailing facts. This is not surprising since Nicosia's aim was not to derive a theory (model) from data but to present an a priori model that could be later validated by data.

**Methodological properties**

**Falsifiability** An aim of scientific theory construction is "to enhance the testability of the hypotheses, by subjecting each of them to the control hypothesis of the system."58 Testability was certainly not absent in Nicosia's preoccupations and there is a true effort of operationalizations throughout the book and quite explicitly in Chapter 7. However the attempted "illustrious" applications expressed in a mathematical form either pose new problems of their own or rely too heavily on unrealistic assumptions; for example, the stimulus (message) is postulated to be applied uniformly through time. In conclusion, it may be said that with respect to this criterion the model performs poorly. One can even fear that no test of the model will be possible without a significant alteration of its very nature. As noted by Nicosia, "simulation of the scheme requires much more 'fine grain' data than those usually generated by current marketing, advertising, and consumer research."59

**Methodological Simplicity** Indeed, Nicosia's model does not "seem" to be methodologically simple. This is due to three other properties of the model: (1) its large "representativeness," (2) its "syntactical complexity," and (3) its low level of "testability." On the other side it must be said that the model's methodological simplicity is improved by its satisfactory level of "formalization," "empirical interpretability," and "linguistic exactness."

**Epistemological criteria**

**Confirmation** To our knowledge Nicosia's model has never been tested.

**Originality** Another aim of scientific theory construction is "to increase knowledge by deriving new propositions (for example, predictions) from premises in conjunction with relevant information."60 Nicosia's work represents a real contribution to marketing knowledge in the sense that it is an admirable analysis of almost every position taken by theorists on the problem of consumer decision making. Nicosia was original—at least at the time the book was first published—in his stressing the fact that consumer behavior should be viewed and investigated as a decision-making process. He does not, however, introduce new theoretical constructs that could significantly modify our "scattered" knowledge on consumer processes. Nicosia himself makes this point very clear: "Neither 'discoveries' nor 'scientific laws' will be revealed. We shall only build upon the efforts of others and present some new ways of thinking about consumer behavior and its dynamics. . . . "61 Nor does Nicosia's model make a significant contribution at the level of "normative marketing" because, as it is admitted, it is not "concerned with rules for making 'good' decisions."62

**External Consistency** On the whole, Nicosia's model is certainly consistent with the bulk of most approaches to consumer behavior. Nicosia is definitively working within the "paradigm" held in common by the marketing community.

**Unifying Power** A theory (model) should "systematize knowledge by establishing logical relations among previously disconnected items."

This aim was certainly among Nicosia's most constant concerns: His
model "attempts to order what are now fragmentary findings and institutional practices." With respect to that goal Nicosia's model provides not only one of the most extensive reviews of the plethora of approaches to consumer behavior in the fields of marketing, behavior sciences, and economics, but also an integration of the analysis and results into a comprehensive framework.

However it is crucial to understand that Nicosia's attempt suffered from what should be considered as the major weakness of most integrative attempts: The ideal procedure would consist in first reviewing the literature and then integrating it. Actually, what happens is that one starts with a more or less well-documented intuition about the "right," "best" way in which consumer behavior should be portrayed and then goes into a "selective" analysis of the literature in order to build his model. For example, Nicosia states: "As we examined existent theories and empirical findings in the literature, we did in fact distill a view common to a good deal of research: the behavior of the consumer (usually defined as the act of choice) is the result of a decision process. It appeared that this view explained many facets of consumer action, the observable variety of individual and societal patterns of life. Further we saw that it could be extended to yield a broader integration of knowledge and generate findings important to marketing and advertising. We then decided to adopt this view as our initial premise, i.e., that consumer behavior is the outcome of decision processes. In the first part of this study we shall review the literature in the light of this premise attempting at the same time to change and improve it."

Such an approach—should we say hardly unavoidable—may result in a distorted view of the literature in the sense that a reviewer, at least theoretically, should strive for letting the facts (the literature) speak for themselves instead of selecting and organizing them according to a set of more or less a priori propositions. In any event, one should be as clear as possible not only about his premises—Nicosia stated them in a very explicit way—but also about the reasons that led him to select them. An integrative model should not be said to be "useful" or "valid" simply because it provides "a reasonably consistent frame of reference" but because its premises are found to be adequately justified. With respect to that point Nicosia seems to be faulty: in his introductory chapter he does explain at length that his model will not be built "by first collecting empirical data and then determining the relevant variables and perhaps their forms of interaction by means of statistical manipulations" mainly because "findings produced by statistical virtuosity would be difficult to interpret and apply." The approach taken by

Nicosia is clearly defined as one that "is based upon propositions identified in our review" because "it is also necessary to formulate theory a priori and collect data accordingly." It seems to us that Nicosia's statement would be superficial if he did imply that it is more difficult to interpret and integrate data than theories. He certainly meant that it is easier to postulate an integrative framework. In conclusion, Nicosia's model should be considered as being of a postulative nature; that is, his own theoretical premises are clearly stated but not justified.

Heuristic Power Another aim of scientific theory construction is "to guide research either (a) by posing on reformulating fruitful problems, or (b) by suggesting the gathering of new data which would be unthinkable without the theory, or (c) by suggesting entire new lines of investigation." It is certainly one of Nicosia's major achievements to have documented the need for future research on (1) the impact on buying of changes in the intensity and mode of applications through time of marketing variables and (2) on the basic mechanisms intervening between a stimulus and a response, but it could hardly be said that his model has historically directly inspired new directions of research. This is certainly one of the most severe failures of Nicosia's endeavor, since his claimed primary goal was wholly pragmatic: Nicosia cites twice Tolman's statement according to which "a model can be defended only insofar as it proves helpful in explaining and making understandable already observed behavior and insofar as it also suggests new behaviors to be looked for. . . ." Although such a failure is certainly due to the very nature of Nicosia's contribution, it is also attributable to a lack of creativity and imagination from his various readers.

Stability Nicosia claims that his model was intended to meet Tolman's requirement that "any such model must, of course, be ready to undergo variations and modifications to make it correspond better with new empirical findings." In our view such a property is hardly met at the level at least of the core structure of the model. What Nicosia's model basically postulates is that there is a chain of interrelated causal linkages between six elements: choice of a certain message—exposure to the message—formation of an attitude—formation of a motivation—decision to buy—purchasing behavior. It does not seem that such a process could be changed without, by doing so, altering the basic nature of the model. It is true, nevertheless, that within each of the four fields there exists a high flexibility and also that the structure of the scheme would not be affected by the choice of different starting points.

64 Nicosia, Consumer Decision Processes, p. 17.
66 Nicosia, p. 18.
70 Nicosia is quite explicit on this possibility (Nicosia, pp. 156–157).
THE HOWARD-SHETH MODEL OF BUYER BEHAVIOR

The Howard-Sheth model of buyer behavior was put forth in 1969 "to describe, apply, and assess those elements of the theory of human behavior that we believe to be essential for understanding the range of activities that we call 'buying.'" To aid recall, both a simplified description of the model and a complete description are provided in Figures 5.2 and 5.3, respectively. In both instances it can be seen that two sets of hypothetical constructs (constructs not immediately based on observable reality)—perceptual and learning constructs—are linked to form a single network, which is influenced by various measurable external stimuli and has as an output measurable behavior patterns.

The model has been both lauded and criticized by Maloney. He commends the model in going beyond the simplistic approach to theory building that is characteristic of most of the literature in marketing and advertising and views the model as a necessary step toward a broader understanding of social-change behavior. At the same time, he notes that the model involves some unduly simplistic assumptions—for example, "that virtually all purchase decisions are made on the basis of a brand or product preference and that if a clear-cut preference is lacking, the buyer actively seeks information that will lead to a preference." Another criticism is that the model is particularly weak in its treatment of timing effects and stimulus-decay effects.

Engel, Kollat, and Blackwell have praised the theory because of the multiplicity of variables it links in a precise way. They criticize the model for introducing variables that cannot be measured at present (although one may wonder how progress would be made without introducing challenges of that sort). They also indicate that the model suffers from recursiveness, substantial measurement error, and that some variables are either difficult to define operationally or difficult to measure. We shall now review this theory in terms of the evaluative criteria discussed earlier.

**Formal properties**

*Well-formedness* Indeed, the theoretical structure follows the patterns of elementary logic.

*Internal Consistency* To the extent that the danger of multiple interpretation does not manifest itself, at least in the form of incompatible interpretations of hypothetical constructs by the same scientist, then the theory appears to score well on the criterion of internal consistency. As Howard and

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12 Howard M. Sheth, p. 30.
13 John Maloney, "Separate Parts Bin For a New Social Psychology."
Sheth present their model it is internally consistent, which is a singular achievement in itself given the relative complexity of the model.

*Independence* In many ways the hypothetical constructs in this model are primitive concepts in that their definition is not explicit, although they clearly account for most of the general character or flavor of the theory. The major primitive assumption of the theory concerns the selection of learning theory (particularly Hull's) as the proper theoretical basis for studying buyer behavior. The primitive assumptions of the theory and its primitive concepts seem to be mutually independent, but the theory is not sufficiently axiomatized to enable one to a less subjective evaluation.

*Strength* The theory is indeed a very general one in intent since it purports to cover both consumer and industrial buyer behavior and to apply to innovations as well as noninnovations. However, the model seems primarily restricted to frequently purchased items and does not cover collective decision making. As we already mentioned in the review of the Nicosia model, it is not possible to conduct a more rigorous analysis of that property.

*Semantical properties*

*Linguistic Exactness* The intensity of each of the concept-variables of the theory, at least at the input and output phases, are quite clear. The intensity of the hypothetical constructs, however, are not as exact as those of the input variable, for example. As indicated, with regard to strength the claimed extension or denotation is quite broad.

*Conceptual Unity* One problem in the Howard-Sheth theory is that the individual hypothetical constructs within the perceptual and learning subsystem exist or at least are treated at different levels of abstraction, and this is not acknowledged adequately in the theory. It is true, however, that the components of the theory are oriented toward the same behavioral phenomena. Given the lack of an explicit statement of assumptions in the theory, it is not easily determined whether the propositions implied by the theory stem from the same set of assumptions. Also, the contexts in which Hull's learning theory has been developed are not particularly comparable to marketing situations. This constitutes a weakness in the conceptual foundations of the theory.

*Empirical Interpretability* Throughout their model, Howard and Sheth show great sensitivity to the problems involved in establishing correspondence rules relating theoretical concepts to real-world phenomena. This is one of the strengths of the model and one of the first treatments of the problem in a marketing context. The output variables are suggested as the result of the functioning of the hypothetical constructs. The output variables are established through correspondence rules, and herein lies a problem. The
output of a set of independent variables should be some qualitatively distinct dependent variable and not merely some more operationalized or lower level of abstraction of the independent variables.

Representativeness As indicated earlier, this theory involves very fundamental mechanisms in perception and learning. This is not uniformly true throughout the entire model, however. The relationship between perceptual bias and stimulus ambiguity is more fundamental (that is, "deep") than the relationship between brand comprehension and confidence. The latter mechanism can be reduced still further, whereas the former cannot. The brand comprehension-confidence relationship is at least not at the same core level as the perceptual bias-stimulus ambiguity relationship.

Methodological properties

Falsifiability One of the most crucial requirements a theory must meet is falsifiability. The model under discussion here is the first comprehensive model to be subjected to empirical test. The results of these efforts have been mixed. In general, indications are that in the foreseeable future any one test should be restricted to a particular segment of the model rather than apply to the model in its entirety. At the present state of its development—or, alternatively, given the methodological technology used to test the entire model—too much "noise" enters the test and therefore it becomes difficult to assess the whole model at once. Lehmann, Farley, and Howard have recently pointed to areas of empirical investigation that would be relevant to the model: (1) different operational definitions should be used; (2) use of nonlinear forms of the model should be allowed for; and (3) lagged forms of analysis should be employed.

Methodological Simplicity For the above reasons the model does not seem to be methodologically simple.

Epistemological criteria

Confirmation In general, the model has received modest support.

Originality The theory is not original in terms of the constructs it presents, and indeed could not fairly be expected to be original in this manner. The nature of the relationships between and among constructs or variables are relatively original, for example, the relationship postulated between confidence and satisfaction and the three-step relationship between satisfaction and stimulus ambiguity.

External Consistency The theory is very deeply rooted in one particular learning theory developed outside of marketing, in Osgood’s cognitive theory, and in Berlyne’s theory of exploratory behavior. Thus in an important way the Howard-Sheth model benefits from the strong points of these theories and suffers from their limitations. Hull’s theory of learning is perhaps the weakest of the theoretical foundations and is also one of the most heavily relied upon nonmarketing works in the Howard-Sheth model. Also, some elements of the model—perceptual bias, for example—are treated in very general ways without adequate tie-ins within some of the recent experimental research. However, for the most part the various elements of the model are linked very well with the existing empirical research data in marketing.

Unifying Power The Howard-Sheth model does bring together relatively confirmed hypotheses from learning theory, cognitive theory, and exploratory behavior theory. These are, of course, highly related areas and students of each area have on occasion assumed the others to be a subpart of their own area. The model also brings together ideas from conflict theory and information processing theory. Also, for example, the construct of “confidence” brings together processes involving the selection of information inputs and the cognitive and behavioral consequences affecting future and current purchases, respectively. The Howard-Sheth model, however, would have had greater unifying power had it attempted to better integrate the input intervening variables with other aspects of the model, although Howard and Sheth acknowledge this limitation and claim that to have done so would have made the model unwieldy.

Heuristic Power One of the strongest features of this model is its heuristic power. It is particularly fruitful in structuring new learning opportunities by raising new and important questions concerning such things as the nature of the loyalty-disloyalty cycle and the information-purchase equilibrium. Another new important topic the authors of the model point out concerns the concept of motivational equilibrium within the purchase-information equilibrium.

Stability The model would seem to be highly stable as far as the component parts are concerned. Changes in the particular relationships between these parts, however, have to be expected.

16 Farley, Howard, and Lehmann.
17 Clark L. Hull, Principles of Behavior; also Clark L. Hull, A Behavior System.
19 D. E. Berlyne, “Motivational Problems Raised by Exploratory and Epistemic Behavior”; also D. E. Berlyne, “Curiosity and Exploration.”
THE ENGEL-KOLLAT-BLACKWELL "MULTIMEDIATION MODEL OF CONSUMER BEHAVIOR"

In the second edition of their book on consumer behavior, Engel, Kollat, and Blackwell present a revised version of their model of consumer behavior. Their model consists of both static components, such as attitudes and personality, and of dynamic components, such as consumer processes. Figure 5.4 shows the complete model we shall be evaluating in terms of the criteria discussed earlier.

**Formal properties**

*Well-formedness* The statement of the theory is well formed.

*Internal Consistency* The internal consistency of the present model is difficult to evaluate, since the propositions that it encompasses are not very precise. For example, a proposition such as "The outcome also can change circumstances and thus trigger additional action" can hardly be subject to contradiction. Otherwise the presentation of the model is quite logical.

*Independence* Like the two other models, this model is not sufficiently axiomatized to enable one to assess the independence of its basic assumptions and primitive concepts.

*Strength* The model aims at broad coverage, encompassing extended problem solving as well as limited—and habitual decision—process behavior. Its actual strength, as compared with its intended strength, will have to be assessed by putting it through a series of tests in a number of contexts.

**Semantical Criteria**

*Linguistic Exactness* Some of the concepts are quite clearly defined, such as exposure, attention, comprehension, and retention. Others, such as the concepts comprised by the central control unit, are less clearly defined. For example, consider the definition of personality: "Each individual has certain ways of thinking, behaving, and responding that make him unique. The sum total of these factors is referred to here as personality." The intrusion of personality thus defined is very broad and its delimitation to other concepts such as attitude would appear to be difficult. Most difficult to define, finally, are the processes. How does one determine whether a particular behavior is external search or not, for example? Finally, the functional relationships are left relatively unspecified, so the possibilities of mathematical representation are limited.

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62 Engel, Kollat, and Blackwell, unlike Nicosia, do not explicitly state their assumptions. They can be found, however, in their section entitled "Some Provisional Generalizations About Consumer Behavior;" see Engel, Kollat, and Blackwell, 2d ed., Chapter 27.
63 Engel, Kollat and Blackwell, 2d ed., p. 11.
Conceptual Unity There is one violation of conceptual unity. Despite the general sociopsychological conception of the model, a whole set of variables, namely the "environmental influences," is directly input into the decision process from the outside. Conceptual unity would require that these variables either pass through the information-processing state (that is, exposure, attention, and so on) or be contained in the central control unit.

Empirical Interpretablity Difficulties with respect to empirical interpretability will arise for precisely those concepts whose linguistic exactness is not well established. This is the case for all of the processes, namely problem recognition, internal search, and so forth. Most of the other more traditional concepts can be interpreted in the usual fashion—for example, attitude questionnaires and personality inventories.

Representativeness The model certainly represents an advance over the traditional "distributive" approach.

Methodological properties

Falsifiability According to the authors, "a complex model of behavior never can be proven or validated in any final sense." The basic structure of the model is not really testable. Although it can be superseded by models that prove of greater utility for particular purposes, it cannot really prove to be true or false.

Methodological Simplicity As a result of the comprehensiveness of the model it should lead to greater possibility of control in the testing of hypotheses. Much of the research, done in consumer behavior is correlational in nature, and a list of potentially operative variables could go a long way toward controlling for rival hypotheses.

Epistemological properties

Confirmation To our knowledge, this model has never been tested.

Originality The model is not very original, either in its component parts or in the relationships indicated. This is not surprising in view of the integrating objective: Since the principal objective seems to be to provide a comprehensive framework for inserting existing research it cannot go much beyond the assembly of existing partial schemes.

External Consistency The foregoing comment implies that the model is quite consistent with the prevailing views on consumer behavior research.

Unifying Power The model has merit in providing a fairly inclusive view of consumer behavior. The quest for inclusiveness explains also the somewhat lower level of accuracy. It is difficult to cover everything and to be very specific about it too.

Heuristic Power The model's relative emphasis on the processes of consumer behavior suggests closer scrutiny of prevailing stage schemes. What stages, if any, should be distinguished? What sequences of stages can occur, and what determines a particular sequencing?

Stability The lack of specificity makes the model stable with respect to any developments that do not transcend the basic conceptual framework. Only entirely new ways of looking at consumer behavior could become a threat to this model.

CONCLUSION

It is difficult to compare the different models with one another. For one thing, they make different assumptions. Nicosia assumes a decision-making orientation covering a large range of consumer behavior. Howard and Sheth, on the other hand, assume a learning-theory framework and develop their model with particular reference to frequently purchased products and services. Are these assumptions mutually exclusive? That is, does the adoption of a decision-making foundation rule out a learning theory foundation and vice versa? Probably not. If the two assumptions or foundations are simultaneously valid, does one subsume the other? If so, does the domain of the Howard-Sheth model fall within the Nicosia model? Totally? In part? These questions are raised here without answers. Many other questions could be presented. Before answers are forthcoming, systematic empirical testing of all three theories is required; virtually none has been attempted thus far. Very few efforts have attempted to evaluate the Howard-Sheth model, but for the most part these efforts have not done justice to the model. The study of theory in a consumer behavior context is still very much in its infancy, and until the various models are tested in whole or in part we cannot draw firm conclusions about their inherent worth or relative power. It should be added, however, that these models are not pure abstractions without any empirical support. All three models, but particularly the Nicosia and Howard-Sheth models, derive some support as well as their inspiration from empirical studies conducted prior to their construction. Basically, these models bring us to cell 2 in Figure 1.4 or the upper left cell of Figure 1.5. Table 5.4 represents a convenient summary of our evaluation of the three models. The only major difference is that one model (Howard-Sheth's) has received some beginnings of testing and application. Two things may equally account for our failure to discriminate in a significant way among the three models.

\(^{a4}\) Engel, Kollat, and Blackwell, 2d ed., p. 7.

\(^{a5}\) Engel, Kollat, and Blackwell, 2d ed., 26–39.
Table 5.4 An Evaluation of Three Major Models of Consumer Behavior

<table>
<thead>
<tr>
<th>Model</th>
<th>Nicolsa</th>
<th>Howard-Sheth</th>
<th>Engel-Kollat</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Formal Criteria</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Well-formedness</td>
<td>very good</td>
<td>very good</td>
<td>good</td>
</tr>
<tr>
<td>2. Internal consistency</td>
<td>good-very good</td>
<td>good-very good</td>
<td>good</td>
</tr>
<tr>
<td>3. Independence</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>4. Strength</td>
<td>good</td>
<td>good</td>
<td>good</td>
</tr>
<tr>
<td><strong>Semantical Criteria</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Linguistic exactness</td>
<td>good</td>
<td>fair</td>
<td>fair</td>
</tr>
<tr>
<td>6. Conceptual unity</td>
<td>good</td>
<td>fair</td>
<td>fair</td>
</tr>
<tr>
<td>7. Empirical interpretability</td>
<td>good</td>
<td>fair</td>
<td>fair</td>
</tr>
<tr>
<td>8. Representativeness</td>
<td>fair-good</td>
<td>good</td>
<td>fair-good</td>
</tr>
<tr>
<td><strong>Methodological Criteria</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Falsifiability</td>
<td>poor-fair</td>
<td>fair</td>
<td>poor</td>
</tr>
<tr>
<td>10. Methodological simplicity</td>
<td>poor-fair</td>
<td>poor</td>
<td>poor</td>
</tr>
<tr>
<td><strong>Epistemological Criteria</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Confirmation</td>
<td>(untested)</td>
<td>fair</td>
<td>(untested)</td>
</tr>
<tr>
<td>12. Originality</td>
<td>good</td>
<td>good</td>
<td>fair</td>
</tr>
<tr>
<td>13. External consistency</td>
<td>fair-good</td>
<td>good-very good</td>
<td>fair-good</td>
</tr>
<tr>
<td>14. Unifying power</td>
<td>good</td>
<td>good-very good</td>
<td>fair-good</td>
</tr>
<tr>
<td>15. Heuristic power</td>
<td>good</td>
<td>good-very good</td>
<td>fair-good</td>
</tr>
<tr>
<td>16. Stability</td>
<td>fair</td>
<td>fair</td>
<td>fair</td>
</tr>
</tbody>
</table>

* The criterion does not apply.

First, it may be the case that our criteria are insufficient; that is, they do not take account of the distinctive qualities of the models. It is true that most criteria are in fact very subjective—badly or not at all operationalized. In our defense, it must be said that we found in the specialized literature no satisfactory measures for any of these.

Second, it is also certainly true that the three models are much alike, not in their assumptions but in their resulting properties. They all seem to belong to the same tradition of verbal models, built around an intuition of the “right” theoretical framework.

INTRODUCTION

This chapter is concerned with the first purpose of information, the explanation of phenomena. The discussion will focus initially on the nature of science and explanation and will then treat the concept of causality in explanation. Following this there will be a discussion of various types of explanation and further discussion of different levels of understanding in ex-