Editors' Series in Marketing

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METATHEORY AND CONSUMER RESEARCH

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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-
plation. The major criteria by which explanations are to be evaluated are then presented, followed by an illustration of how explanation can serve marketing strategy.

WHAT IS AN EXPLANATION?

Little disagreement exists concerning the goal of science: It is the extension of certified knowledge. Explanation plays a crucial role in the process of extending certified knowledge. Nagel is quite specific about this point: "It is the organization and classification of knowledge on the basis of explanatory principles that is the distinctive goal of the sciences." Given the importance of explanation, the first question which must be asked is "What is an explanation?"

An explanation is an answer to a why question of the form "why p?" where p designates a statement that supposedly is true and refers to some fact, event, or state of affairs. Examples of such "why" questions are: "Why do consumers buy more of brand X than of brand Y?" "Why do certain consumers adopt new products earlier than other consumers?" and "Why is the correlation between attitude scores and actual purchase behavior so low?" Explanation—that is, the answering of "why" questions—is one of the three major purposes of science (the other two are prediction and control, although some scholars do not distinguish between explanation and prediction).

Scientific explanations must meet two requirements. These have been labeled the requirement of explanatory relevance and the requirement of testability. Explanatory relevance means that the account of some phenomenon provided by an explanation would constitute good grounds for expecting that the phenomenon would appear under the specified circumstances. Explanatory relevance is achieved when "the explanatory information adduced affords good grounds for believing that the phenomenon to be explained did, or does, indeed occur. This condition must be met if we are to be entitled to say: 'That explains it—the phenomenon in question was indeed expected under the circumstances.' Most briefly, the "facts" adduced by the explanation must be relevant to the point at issue—that is, the phenomenon.

An explanation having no test implications is devoid of empirical content. No empirical findings could support it or disconfirm it and consequently it provides little or no ground for expecting a particular phenomenon; it lacks what Hempel calls "objective explanatory power." Thus the requirement of

testability is that scientific explanations must be capable of empirical test. An explanation that meets the first requirement (empirical relevance) also meets the requirement of testability, whereas the converse does not hold.

CAUSALITY AND THE CONCEPT OF CRUCIAL TEST IN EXPLANATION

The definition of an explanation employed in this chapter relies heavily on the concept of causation, and a very brief exploration of the meaning of the term "cause" will be helpful at this point. The usual lexical definition holds that cause is something that occasions or effects a result. For the researcher, the objective of explanation should be to provide, with as high a degree of certainty as possible, information about what variables influence or produce other variables. Thus, "cause, in one way or another, is central to the goal of establishing scientific laws. In general terms, causation refers to the factors that make designated phenomena happen or change."

It is necessary to determine in a given context what the marketing decision variables (causes) are so that procedures can be established for manipulating them. It is also necessary to know what causal forces cannot be manipulated; however, even in this situation behavioral statements in causal form should be provided. When one is told that two variables are related, it is essential to ask how they are related. There should be a clear statement of the nature of the mechanism whereby one variable affects another. Only when hypothesis or theoretical statements are presented in this way can they be of greatest utility in deriving marketing implications. One of the most important factors inhibiting fuller exploitation of behavioral research in marketing is that the marketer is generally presented only with associational statements. Presumably, the relationships between variables within a statement are not believed to be spurious or they would not be presented. If the association is a direct (or even indirect) one, causality is implicit and should be made explicit. It is an excellent exercise for the researcher to make explicit what the causal mechanisms are that he is assuming. This will clarify his own conceptual scheme and help identify intervening variables not otherwise readily apparent.

A causal statement, then, is a statement or proposition in a theory that states that there exist environments in which a change in the value of one variable can produce a change in another variable without the necessity of changes in still other variables in the environment. An important element in the preceding statement is the idea that one variable, X, produces a change in another variable, Y.

Before noting any further characteristics of causal statements, it will be useful to formulate a statement in a marketing context and use this state-

1 Robert Merton, Social Theory and Social Structure.
2 Ernest Nagel, The Structure of Science, p. 4. Italics added.
4 Carl G. Hempel, Philosophy of Natural Science, p. 48.

Hempel, Philosophy of Natural Science, p. 5.
Sanford Labovitz and Robert Hagedorn, Introduction to Social Research, p. 3.
ment to illustrate the properties of causal statements. Such a statement might be: *Norms of reciprocity among customers affect the outcome of personal selling situations.* Stinchcombe describes this level of generality as one in which a particular of the variables within a broad class of phenomena explains another particular variable in another class of phenomena. The two variables are norms or feelings of reciprocity and the outcome of a selling effort. The connecting mechanism at the individual level might be that feelings of obligation (in turn explained by social-exchange theory) develop within a consumer as he comes to perceive the salesman as investing in the selling situation resources valuable to the salesman. Because of an apparent opportunity cost incurred by the salesman (as perceived by the prospect) in his relationship with the consumer, the consumer will reciprocate by rewarding the salesman with a purchase. A number of things in the causal sentence that are properties of causal statements should be noted:

1. The statement assumes, for example, that high levels of reciprocity among consumers are found in successful personal selling situations; this statement would probably be better stated as a probabilistic explanation, a type to be discussed later.

2. Changes in the level of reciprocity produce changes in the frequency of successful personal selling.

3. Successful selling efforts by salesmen do not produce feelings of reciprocity among consumers. (This may at first glance seem contradictory but salesmen may only activate or stimulate this variable, not create it. The question of reciprocal causation will not be considered here.)

4. For a change in reciprocity to produce a change in sales there do not have to be changes in other variables.

5. The variables involved in a given causal statement may be of different measurement classes; for example, one variable may be dichotomous and the other continuous.

6. There can be contexts where the causal statement does not apply. Presumably, it would not apply to “creative” personal selling situations.

7. Other variables such as changes in level of disposable income or advertising could cause a change in sales without invalidating the causal statement, although ideally these other variables should be incorporated in the statement.

8. Most important, we do not know that a given change in sales is in fact caused by a change in reciprocity (either among a given group or by exposure of other groups to the sales effort). Even if we hold constant the effect of advertising, income change, and other imaginable variables and still find variations in reciprocity to be associated with variations in sales, we cannot conclude with absolute certainty that the causal statement is true. There is always the chance that a variable or set of variables (including measuring errors and problems in the research design) that we have overlooked has produced the change in sales. This problem, according to Stinchcombe, can be minimized by the *crucial experiment*—that is, selecting as tests of a theory those hypotheses whose confirmation automatically eliminates competing theoretical explanations. Somewhat differently, we should look for those consequences of our theory whose negation is implied by alternative theories.

Many scientists dispute the utility of the *crucial experiment* as the means of eliminating rival hypotheses, and a brief excursion on this topic is in order here. There are two ways in which we can interpret the rule “one should eliminate rival hypotheses.” The first one is illustrated by the use of control groups. Before one experiment is being performed there are two *empirically equivalent* hypotheses available; that is, two hypotheses yield much the same testable predictions. For example: (1) “Pretesting leads to higher scores on the same test when performed later” and (2) “Exposure to information that is favorable to product X leads to positive attitude changes toward X among the exposed individuals.” Now, if we want to test hypothesis (2) experimentally and perform pretest and post-test attitude measurement, we cannot be sure whether the positive change in attitudes, if any, is a result of (2) or of (1). Hence, we have to use a control group in order to eliminate the plausible hypothesis (1). Note that the use of the control group presumes the truth of hypothesis (1) for, if (1) were not plausible, it could not invalidate (2). Elimination of (1), thus, does not mean that we invalidate (1) or control for its effect but it means that we are less convinced of its validity.

Crucial hypotheses represent the second way in which one can talk about the elimination of plausible rival hypotheses. In contrast with the above sense, here we have two hypotheses that yield *empirically conflicting* predictions. Under these circumstances, an experiment serves to falsify (that is, to invalidate) one of the two or more hypotheses, subject to the logical difficulties involved. Copi, a critic of the crucial experiment device (in contrast to Stinchcombe) acknowledges that an experiment can be crucial in showing the untenability of a group of hypotheses that make up the rival theory. However, no individual hypothesis can ever be subjected to a crucial experiment (except in one special situation). There may always be hidden assumptions that need to be made explicit and open to evaluation. In the process of “dragging hidden assumptions” out into the open, one may discover the falsity of a previously supposed hypothesis and the credibility of a

7 Arthur L. Stinchcombe, *Constructing Social Theories.*
8 Donald T. Campbell, “Prospective: Artifact and Control.”
of the more flexible and broader frame of mind it produces, enables an individual to incorporate new elements (innovations) in his cognitive structure. The national planner could put this information to use by structuring the infrastructure of the formal communications system, thus eventually broadening the outlook of the population, which in turn facilitates acceptance of innovations necessary for national development.

**LEVELS OF UNDERSTANDING IN EXPLANATION**

There are at least four levels of understanding in explanation in the behavioral sciences. The first level is simply establishing the fact that some phenomenon exists. Next is the establishment of what the phenomenon is. Specifying how the phenomenon functions is the task of the third level of explanation. The fourth level of explanation is concerned with why the phenomenon exerts its influence. These are shown in Table 6.1. In reference to this table, level one is the empirical determination that a phenomenon exists. Level two involves defining it—conceptualizing it explicitly—as being of a certain nature, Q, and explaining it in terms of the facts and conditions, producing the phenomenon. The third level is concerned with how factors X and so on interact to produce Q. The fourth level is concerned with the reasons why (W) and so on) the factors isolated produce the effects they do. Level three tends to involve empirical generalizations and level four involves higher-order hypotheses and premises.

<table>
<thead>
<tr>
<th>Level of Understanding in Explanation</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>One</td>
<td>A certain phenomenon has an empirical existence.</td>
</tr>
<tr>
<td>Two</td>
<td>The phenomenon is of the nature Q and is produced by factors $x_1, x_2, \ldots, x_n$.</td>
</tr>
<tr>
<td>Three</td>
<td>Factors $x_1, x_2, \ldots, x_n$ are interactive or have interacted in manner $y_1, y_2, \ldots, y_n$ to produce in some past or present time a phenomenon of the nature Q.</td>
</tr>
<tr>
<td>Four</td>
<td>Factors $x_1, x_2, \ldots, x_n$ interact in a manner $y_1, y_2, \ldots, y_n$ for reasons $w_1, w_2, \ldots, w_n$, thus producing a phenomenon of the nature Q.</td>
</tr>
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</table>

A good illustration of these four levels of explanation involving behavioral phenomena of relevance to marketing is presented by H. G. Barnett’s *Theory of Innovation* as a basis for cultural change. Only elements of this theory,

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12. See, for example, John T. Doby, “Logic and Levels of Scientific Explanation.”
his notion of basic wants as necessary conditions for innovation, will be treated. At level one a phenomenon, an act of innovation (that is, adoption) is observed; it is known (not just assumed) to have occurred or to be in the process of taking place. The phenomenon is observed to be of a certain nature, \( Q \)—in this instance, the purchase of an ultramodern architectural blueprint for a permanent home or possibly the actual purchase of such a home. Thus the nature of the event, \( Q \), consists of a purchase (a particular behavior) of an object perceived as new with “new” being defined in terms of qualitative distinction rather than in terms of time. \( Q \) then is composed of three factors: (1) purchase behavior, (2) perceptual processes, and (3) an object having qualitative distinction from other objects in the same general class of objects. \( Q \) may have been produced by or be a result of central subliminal wants (a type of self-want) and creative wants (a type of want that we relabel as autotelic wants). These two wants represent \( x_1 \) and \( x_2 \) in Table 6.1. Central subliminal wants are those that relate to the individual’s need for self-preservation and self-definition. They influence how we structure and organize our environment. Creative wants emphasize accomplishment, with the process or act of being creative being at least and probably more important than the resultant innovation or objects. In general, wants of this nature result from dissatisfaction with the accepted way of doing things.

Level three is concerned with explaining how central subliminal wants \( x_1 \) and creative wants \( x_2 \) interact in manner \( \gamma_1 \) to produce the adoption of the innovation in question. Explanation in this case takes the form of describing what \( \gamma_1 \) is. In our example, creative wants interact with central subliminal wants. The need to define oneself as unique, avant-garde, and the like, together with dissatisfaction of existing modes of architecture as means of achieving this self-definition, leads to the adoption of radical architectural style. But in level three the emphasis is upon the manner of interaction. It could be explained that creative wants stimulate (the manner of interaction) central subliminal wants and that for reasons of congruence or cognitive consistency the central subliminal wants are expressed in creative ways; that is, the individual establishes a self-definition of being an innovator. Being interested in doing innovative things and being dissatisfied with existing conditions bring about the idea that he is an innovator—an idea that becomes expressed in such behavior as the acquisition of a radically or at least significantly different home. The manner of interaction has a mathematical side and we would state further that the factors are additive or multiplicative.

At level four, explanation goes beyond the relationship of the \( x_i \)'s to each other and attempts to account for reasons (\( w_1, w_2, \ldots \)) factors \( x_i \) interact in manner \( \gamma_1 \). An explanation at this level has already been given. It was stated previously that for reasons of cognitive consistency, the \( x_i \)'s (creative wants) cause the \( x_i \)'s (central subliminal wants) to express themselves in innovative (that is, creative) ways. The notion of cognitive consistency in this illustration constitutes the reason, \( w_1 \).

### TYPES OF SCIENTIFIC EXPLANATION

There are basically four types of models of scientific explanation: the deductive-nomological, the probabilistic model, the functional or teleological model, and the genetic model. Each of these is discussed below.

#### DEDUCTIVE-NOMOLOGICAL EXPLANATIONS

In deductive-nomological explanations the explanans assert universal deterministic relationships. The universal statements, in this case are of the form: “In all cases when conditions of kind \( F \) are realized, conditions of kind \( G \) are realized as well.” Examples of such statements are: “High perceived risk (\( \equiv \) condition \( F \)) will always result in high-information-seeking behavior (\( \equiv \) condition \( G \))” or “Extreme brand name ambiguity (\( \equiv \) condition \( F \)) will always result in a negative attitude toward the brand (\( \equiv \) condition \( G \)).”

Given that the explanans contain deterministic universal statements and the corresponding initial conditions, the explanandum follows with logical certainty from the explanans. The classic example of this logical argument is:

- **C**: Socrates is a man
- **L**: All men are mortal
- **E**: Socrates is mortal

The complete explanation of the examples given above would be as follows:

- **C**: Consumer \( A \) perceives high risk
- **L**: High perceived risk results in high information-seeking
- **E**: Consumer \( A \) shows high information-seeking behavior

- **C**: Brand name \( X \) is extremely ambiguous
- **L**: Extreme brand ambiguity results in a negative attitude toward the brand
- **E**: The attitude toward the brand is negative

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16 Stephen J. Miller, Michael B. Mazis, and Peter L. Wright, “The Influence of Brand Ambiguity on Brand Attitude Development.”
PROBABILISTIC EXPLANATIONS

Probabilistic explanation can be contrasted with deductive explanation: "With a deductive explanation, the explanatory premises would, if true, provide conclusive evidence for the conclusion, constituting a totally sufficient guarantee of the explanatory conclusion. With a probabilistic explanation, the explanatory premises do not provide a guarantee of the conclusion, but merely render it relatively likely. . ." Examples of such sentences are: "When a product is not subject to testability, it is highly probable that personal influence will be operative" or "When a product is highly conspicuous, the probability of reference-group influence is high."

Social scientists usually encounter probabilistic explanations when the explanatory premises (for example, reinforcement theory) contain a statistical assumption about some class of elements (for example, consumers exposed to random reinforcement as opposed to routine reinforcement) and the explanandum (brand loyalty) refers to a given consumer in that class of consumers. Thus if we want to explain why a given consumer is brand loyal (assumed to be a dichotomous variable for purposes of illustration) we would point out that a known percentage of consumers exposed to random reinforcement will be brand loyal. Notice that this is not deductible. To use another context, we cannot say with certainty that because a man is black he will consume prestigious brands of scotch whisky. However, we can say that if a man is black there is some ascertainable likelihood (established through research) that he will be a consumer of prestige scotch whisky.

It is generally accepted that probabilistic statements, as interpreted in the social sciences, cannot be finally confirmed or even disconfirmed by observational evidence. It is also accepted that we cannot deduce from any statistical generalization a statement to the effect that any particular event must occur: The explanans of a probabilistic explanation does not logically imply the explanandum; the former gives only a more or less high degree of inductive support or confirmation to the latter. Thus the truth of the explanans is compatible with the falsehood of the explanandum.

The basic form of the probabilistic model is as follows:

\[ p(G, F) = r \]

\[ b \text{ is an } F \]

\[ b \text{ is a } G \]

In this case, the universal statement (the law) is \( p(G, R) = r \); that is, "whenever an event of type \( F \) is the case, the probability of the occurrence of an event of type \( G \) is \( r \)." The singular statement is "\( b \) is an \( F \)," where \( b \) refers to a particular event. The conclusion, "\( b \) is a \( G \)," in this case, is not implied logically but has only a more or less high degree of inductive confirmation. For example, a certain individual \( b \) is a successful salesman \( (F) \). The probability that high achievers \( (G \) personality types) are successful salesmen \( (F) \) is very high. Thus, individual \( b \) is a high achiever. Again, the conclusion that the individual salesman is a high achiever is not logically implied but only has a high degree of inductive support.

The orthodox view of explanation corresponds to the "nomological-deductive model" and the "probabilistic model." The two models are called "the covering-law models of explanation"; the thesis that explanations in science are analyzable in terms of these two models is called "the covering-law theory of explanation."

The explanatory connection effected by a probabilistic explanation may be said to be weaker than that effected by a deductive explanation. This fact has led some philosophers to deny the explanatory efficacy of probabilistic explanations; it has led others to claim that probabilistic explanations, although acceptable as temporary stopgap measures, are eventually to be replaced by fully deductive ones as our knowledge of relevant causal factors grows.

It may seem that deterministic explanatory premises lead to a pattern of explanation that is of the deductive type, whereas probabilistic premises imply inductive subsumability. The former assumption is correct; the latter is not. It is possible to have an explanation of the deductive-nomological type with probabilistic explanatory premises. This will be the case when the explanandum is an empirical generalization involving probabilities. As an example, consider the following model of brand-purchase behavior. We need two hypotheses as explanans. First, the probability of a consumer's purchasing brand \( X \) is 0.5. Second, the outcomes of different purchase trials are statistically independent of each other. These two hypotheses imply deductively that the probability of purchasing brand \( X \) is 0.5 even after a long sequence of nonbrand \( X \) purchases. Explanations of this kind are called deductive-statistical explanations.

In the case where one has to explain individual events, the use of probabilistic explanatory premises does lead to inductive subsumability.

GENETIC EXPLANATIONS

Genetic explanations are those that account for a particular state or condition of some unit in terms of some prior state or, more frequently, in terms of a sequence of some prior states. Stinchcombe refers to this as historicist explanation; that is, "One in which an effect created by causes at some previous period becomes a cause of that same effect in succeeding

18 Thomas S. Robertson, Innovative Behavior and Communication, p. 191.
19 Nagel, The Structure of Science.
periods.”\textsuperscript{21} It is the task of genetic explanations to determine the sequence of events through which an earlier system has been transformed into some subsequent one.\textsuperscript{22}

Gentic explanations are used quite frequently in the explanation of consumer behavior. Actually, most of the explanations involving principles of learning can be regarded as genetic. In Kuehn’s learning model of brand-choice behavior,\textsuperscript{23} the probability of purchasing a brand \( A \) is a function of past brand purchases, and it is revised after each purchase. It is easy to see that this model conforms to the covering-law approach. The explanandum is a particular brand choice. The explanans consist of general principles and initial conditions. The initial conditions describe the past purchase behavior of the consumer and, in particular, the purchase probability that was applicable to the particular brand choice one wants to explain. The rule according to which this probability is to be computed is given by the general principle in the explanans. Explanations of product-life-cycle change are essentially genetic in nature. To the extent that life-style behavior is self-reinforcing, it too is genetic in nature.

FUNCTIONAL OR TELEOLOGICAL EXPLANATIONS

“This type of explanation is that in which the ‘why’ question about a particular event or activity is answered by specifying a goal or end towards the attainment of which the event or activity is a means.”\textsuperscript{24} Explanations involving the symbolic attributes of products are illustrative of this type of explanation.

There is an attempt to reduce all teleological explanations to causal explanations. The way it is done “is to emphasize the similarity between teleological explanations of the type which we are not concerned and the teleological explanations of intentional actions in which the future reference can be explained away, and to argue by analogy that in all cases the teleological explanation is reducible to one in which an intention, or something analogous to an intention, in the agent is the ‘efficient’ cause, so that goal directed activity is always a sort of goal-intended activity.”\textsuperscript{25}

To repeat, functional or teleological explanations are those that indicate one or more purposes that a unit serves in maintaining or achieving a certain situation, state, or goal. Alternatively, it is one “in which the consequences or some behavior or social arrangement are essential elements of the causes of that behavior.”\textsuperscript{26} In other words, in this type of explanation “the ‘why’ question about a particular event or activity is answered by specifying a goal or end towards the attainment of which the event or activity is a means.”\textsuperscript{27} Such explanations are abundant in marketing. Thus the purchase of a particular product can be explained in terms of the psychosocial needs it satisfies. Blacks supposedly drink scotch whisky proportionately more than any other demographic group because it serves as a symbol of achievement. Product categories—for example, convenience goods, luxury items, and so on—are defined on the basis of the functions served by members of the product groups; the functions served explain the reason for the purchase decision.

Just as there are types of explanans and thus explanations so are there types of explananda. The latter fall into two basic categories: individual events and empirical generalizations. These are discussed below.

INDIVIDUAL EVENTS

Explanations that have individual events as their explananda are low-level explanations because the explanatory premises invoked for the explanation of individual events are usually empirical generalizations containing only observational concepts—that is, concepts that are operationally defined. Examples of such explanatory premises are: “Education is positively related to income” and “moderate fear appeals are positively related to accident prevention.” These explanatory premises can be used to explain individual events such as the results of an analysis of panel data or the results of a survey.

Notice that we talked about the explanation of the “results” of studies, and not about the events directly. Scientific explananda are descriptions of events rather than the events themselves. Therefore, instead of pointing to examples of consumer behavior, we describe it verbally with sentences such as: “Consumer \( A \) purchased one giant size of detergent” or “Consumer \( A \) reported the purchase of five six-packs of beer during the month of May, four of which consisted of brand \( X \) and one consisted of brand \( Y \).” Such descriptions of events constitute the data language of consumer behavior research, and the sentences involved can be called protocol sentences or observation statements. Incidentally, the covering-law model presupposes such a description of events, for we would be hard pressed to apply logical derivations to objects. Accordingly, in order to “explain” the preceding two observation statements, we may establish the following explanatory argument: “Consumers who are highly dogmatic have a high brand loyalty.”

\textsuperscript{21} Stinchcombe, \textit{Constructing Social Theories}, p. 103.
\textsuperscript{22} Nagel, \textit{The Structure of Science}, pp. 25, 568.
\textsuperscript{24} R. B. Braithwaite, \textit{Scientific Explanation}, p. 322.
\textsuperscript{25} Braithwaite, pp. 325–326.
\textsuperscript{26} Stinchcombe, \textit{Constructing Social Theories}, p. 103.
\textsuperscript{27} Braithwaite, \textit{Scientific Explanation}, pp. 325–326.
"Consumer A is brand loyal to detergent X," and "The higher the brand loyalty to X, the higher the purchase probability for X."

One important implication of the fact that scientific explananda are descriptions of events rather than the events themselves is that one never gives explanations of events in their totality, but only of certain selected aspects of them. For a concrete event has infinitely many different aspects and thus cannot ever be completely described, let alone completely explained. For example, when describing consumer behavior, one is usually not interested in whether consumers seize the products with their left or right hand, what kind of glasses they wear on their shopping trips, and so forth.

The fact that our explananda consist of descriptions of selected aspects of the referent events raises the question of how these aspects are being selected. What, for example, makes it unlikely that the fact described above will be collected by a researcher interested in consumer behavior? The answer is that the potential explanations one has in mind dictate the choice of observations. Thus one might say that the explanans determines the explanandum. A side effect of this dependency of the explanandum on the explanans is that the set of possible explanations is being limited. For example, the collection of behavior data of brand-purchase behavior alone forces the researcher to rely primarily on learning hypotheses. Before one is able to apply cognitive explanations, for example, additional explananda will have to be supplied.

The foregoing argument hopefully has shown that no hard and fast line can be drawn between explanation and description where the description provides the explanandum. The gap between explanation and description is even smaller when we consider the explanation of individual events by means of theoretical principles. In consumer behavior, this means that, instead of subsuming the individual event under some empirical generalization, the components of explananda are regarded as indicators of certain underlying variables, in terms of which they are then explained. Hence, the function of explanation, in this sense, consists of stating "what the explanandum really is and, hence, relating it to other systems which are then seen to be essentially similar to it." As an example, reconsider the illustration of brand loyalty and brand satisfaction given previously. There, we linked "brand loyalty" to "response probability" and "brand satisfaction" to "reinforcement." By doing so, we have related the brand-choice behavior to the entire field of learning theory. This has beneficial effects both for the learning theory and for researchers in the field of consumer behavior. To the learning theorists, the benefit consists of a new context in which their theory can be tested and further developed. To marketing researchers, the benefit consists of a host of explanations and predictions that can be generated on the basis of learning theories and that otherwise would not have been conceived.

EMPIRICAL GENERALIZATIONS AS EXPLANANDA

At the next higher level of explanation the explananda consist not of individual events but of empirical generalizations that subsume and inductively generalize these findings. Examples of empirical generalizations as explananda are "innovators are more cosmopolitan than noninnovators," "brand loyalty is negatively related to deal proneness," and "the higher the brand satisfactions, the higher the brand loyalty." These empirical generalizations are now treated as explananda; that is, one is looking for universal statement that inductively or deductively subsume such statements expressing empirical regularities. Since this type of explanation usually involves theories, it is also called theoretical explanation.

At this point it seems appropriate to give a short characterization of theories before proceeding with the presentation of theoretical explanation. Theories consist of concepts that are connected by propositions. Some of their concepts refer to events that are directly observable, whereas other concepts have no directly observable counterpart in the real world. Theories have been likened to networks, where the concepts are represented by the knots, and the threads connecting the latter correspond, in part, to definitions, empirical generalizations, correspondence rules, and nonobservational propositions. This network is entirely conceptual and impinges on experience only along the edges. These edges correspond to the operationally defined concepts. Those concepts which are in the interior of the network—that is, somewhat removed from the realm of observation—are linked to the latter either directly by means of correspondence rules or indirectly through propositions connecting them with other concepts which, in turn, do have correspondence rules.

On the basis of this view of theories, theoretical explanation means that the operationally defined concepts of which empirical generalizations consist have somehow to be attached to a network consisting of theoretical (that is, relatively nonobservational) concepts. As an example, consider the Howard and Sheth theory of buyer behavior. It consists of a system of theoretical concepts—including attention, motives, attitude, and intention—of which are linked to the realm of observation by correspondence rules. These correspondence rules (recall the discussion in Chapters 3 and 4) stipulate that certain operationally defined concepts—for example, the numerated response to a set of bipolar scales reflecting salient purchase criteria—are indicators of theoretical concepts (for example, of attitude). Consequently,

31 Rescher, Scientific Explanation, p. 3.
32 Mary Hesse, "Is There an Independent Observation Language?" p. 72.
33 W. V. O. Quine, From a Logical Point of View, p. 42.
empirically found regularities between operational measures of attention and attitude, for example, may be explained using hypotheses that connect the theoretical concepts of attention and attitude with other theoretical concepts, such as motives and choice criteria, providing the connecting links.

One important factor about theoretical explanations and explanations in general is that a given explanation automatically generates the need for a new explanation. This is the case with empirical generalizations. Once an empirical relationship has been established, the question “why p?” arises and has to be theoretically explained. Suppose one manages to find an adequate theoretical explanation. Immediately, the question “why p?” arises again, and so forth. As an example, consider Singer’s discussion of Osgood and Tannenbaum’s congruency theory, which they have developed in order to explain the direction and magnitude of attitude change: “It predicts that if a person’s cognitive system contains related attitudes that are inconsistent, the person will restructure toward a consistent attitude complex. They provide a detailed and objective method for stating the changes and final attitude values; algebraic rules based on some of their assumptions are provided. Once again, however, no rationale is given for why the particular changes they predict should occur.”33 Osgood and Tannenbaum’s explanans becomes Singer’s explanandum. He proposes a motivational approach to explaining why inconsistency should result in particular attitude changes. It is clear that a motivational explanation, once found, would again be subjected to the “why?” question. To answer it, it might be necessary to have recourse to physiological concepts and hypotheses. These explanations might then in turn be explained by physiochemical concepts. Such regress in explanation raises the problem of theoretical reduction. Is consumer behavior reducible to psychology? Is psychology in turn reducible to physiology, and so forth? In general, the problem of reduction cannot be decided by a priori arguments. It depends on whether suitable, connecting propositions can be found which link the phenomena and concepts of one theoretical domain with another one. Until such connecting propositions are found, the reductionist proposition should be construed “as a heuristic maxim, as a principle for the guidance of research.”34

EVALUATING EXPLANATIONS

Suppose an explanation has been offered to account for an explanandum. We can now ask the question: “How good is this explanation?” Or, in cases when we have more than one explanation, we ask ourselves, “Which explanation is the best?” What are some of the criteria that help to make these decisions?

EVIDENTIAL STRENGTH

One group of such criteria looks at the evidential strength of an explanation—that is, the strength with which the explanatory premises imply the explanandum. The evidential strength of an explanation plays only a role for inductive explanations. Deductive explanations imply the explanandum with certainty, and there can be no difference in the strength with which the explanans implies the explanandum. Such differences exist, however, for inductive-statistical explanations. The explanatory premises may imply the explanandum with greater or smaller probability. It appears desirable to have a high rather than a low probability for the occurrence of the explanandum. Consequently, the first criterion of evidential strength is a criterion of explanatory power. The explanatory power of an explanation can be defined as “the extent to which it renders the occurrence to be explained more likely than other alternative occurrences.”35 This is to say that as an explanation becomes better, the greater the probability of the occurrence of the explanandum.

Several points are particularly helpful in assessing the usefulness of an explanation. Of course, these are not unrelated to the criteria for evaluating theories. The first point is whether an explanation holds for a given class of phenomena. Can the explanandum be logically deduced from the explanation? Since this has already been discussed at length we shall not dwell on it beyond saying it is the crucial test of any explanation. The remaining evaluation points are simplicity, scope, precision, power, and accuracy.36

SIMPLICITY

Situations may arise in which one has several alternative explanations of approximately equal evidential strength. One possible choice criterion is to choose the simplest explanation. This criterion has great intuitive appeal, and as mentioned by Hempel, “Many great scientists have expressed the conviction that the basic laws of nature are simple.”37 Alas, the criterion of simplicity is difficult to apply, for “it is not easy to state clear criteria of simplicity in the relevant sense and to justify the preference given to simpler hypotheses and theories.”38 To illustrate, it would seem preferable to have an explanatory operation involving three variables as compared to one with 15 variables, provided that both of them account equally well for the explanandum. However, the equation involving 15 variables can easily be made as simple as the one involving three variables by the simple device of redefinition. If one regards each five of the original variables as indicators of three “underlying”

34 Hempel, Philosophy of Natural Science, p. 106.
35 Rescher, Scientific Explanation, p. 66.
36 For a treatment of most of these see E. J. Meehan, Explanation in Social Science: A System Paradigm.
37 Hempel, Philosophy of Natural Science, p. 42.
38 Hempel, p. 41.
variables, one obtains an equation with only three variables. Consequently, the criterion of simplicity has to be refined in order to take into account the complexity of the variables. This, however, as one may suspect, opens up a host of new problems.

SCOPE

Scope refers to the range of events to which an explanation can be applied. It is difficult in the social sciences to achieve wider scope without introducing ambiguity. “Social power” for example is a concept of wide scope, having considerable vagueness and differing interpretations. In fact the meaning of the term “power” is frequently defined by the context in which it is used, thus resulting in numerous definitions inductively derived. Such use of concepts not only limits their scope and thwarts the goal of achieving standardized meanings of concepts but involves poor scientific reasoning. The concept of rationality in the context of consumer behavior (and other contexts of behavior) is illustrative of another term with (potentially) wide scope but considerable ambiguity. Part of the ambiguity involved stems from different assumptions made by market researchers on the relative importance of conscious and unconscious motivations, and beyond this, the way in which they function in the consumer arena. Indeed, the concepts of conscious and unconscious motivations themselves are ambiguous. This is due in part to the fact that a given consumer event may be logically derived from and explained by very different and sometimes mutually exclusive psychoanalytic concepts. Determining which of the competing concepts is “correct,” or most plausible, is exceedingly difficult because of measurement problems and the wide range and depth of collateral information required on an individual basis.

A number of hypotheses and theories relevant to marketing and having broad scope can be cited briefly. The two-step flow hypothesis mentioned earlier is a good example of an explanation of marketing-relevant communication behavior. Exchange theory as articulated by George Homans39 and Peter Blau40 is a theory of wide scope. Parsons’ general theory of action has wide scope but, unlike exchange theory (or at least compared with exchange theory), it is difficult to put to empirical test. The theories and working concepts in the decision sciences are currently receiving wide application. E. T. Hall’s theory of culture as communication is another explanans with extremely broad scope although, like Parsons’ theory, it is difficult to test empirically.41

39 George E. Homans, Social Behavior: Its Elementary Forms.
41 Edward T. Hall, The Silent Language. For a marketing discussion of this work see Gerald Zaltman, Marketing: Contributions from the Behavioral Sciences.

PRECISION

“The precision of an explanation refers to the degree of specification of the variables involved and of the relationships between those variables.”42 Note that there are two areas of precision referred to in this quotation. The first concerns the specification of the variables. The second concerns precision in the statements concerning the relationship among variables.

There are, of course, excesses in precisions that may cause theoretical and conceptual problems. For example, the use of relative time of adoption in diffusion theory as an operational measure of innovativeness is quite precise and widely practiced. However, it is very misleading and not a variable that is always conceptually distinct from the independent variables in adoption and diffusion equations. The chief objection in this case rests in part on the argument that time is simply a proxy variable masking several other variables, some of which are themselves used to predict time of adoption and acceptor categories. There are other techniques that are being developed and refined to provide good empirical measures of innovativeness—that is, measures having relatively good isomorphism with the theoretical notion of innovativeness.

Measurement is a key factor influencing precision. In the first case, it affects the accuracy of the operationalized concept: The smaller the measurement error the more isomorphic the relationship between theoretical concepts and their empirical indicators. In the second place, measurement affects the detection of such things as interaction effects, which influence the interpretation of relationships among explanatory variables.

POWER

Power refers to the degree of control over the environment an explanation provides. Power depends upon the precision of the description and explanation and upon the completeness of the variables. An explanation encompassing all or many relevant variables and providing linking statements as discussed in the preceding section on precision is considered more powerful than an explanation or explanans that involves a few variables inarticularly expressed and relies heavily on the clause, “other things being equal.” The ceteris paribus clause may be invoked because not all relevant variables have been identified or because their functioning is not understood.

ACCURACY

Accuracy refers to the frequency with which factors not included in the explanation interrupt the situation the explanation concerns. With regard to accuracy in the first case there is always an unavoidable gap, a lack of accuracy, between a concept and its empirical operationalization. This involves what some writers call validity. “In a very real sense no theoretically defined
The nature of explanation

Concepts can be directly translated into operations nor can theoretical propositions be tested empirically."\(^{43}\) In an article largely devoted to this problem of accuracy, Zaltman concludes: "Perhaps one of the greatest obstacles inhibiting the effective application of the behavioral sciences to marketing problems is that this very important quality of isomorphism (between theoretical and operational systems) can only be determined intuitively."\(^{44}\) This is shown graphically in Figure 6.1.

**Figure 6.1 Levels of abstraction and epistemic relationships in applying concepts to marketing.**

The second aspect of accuracy concerns accuracy in the stated relationships between variables. Blalock argues vigorously for specifying relationships in the form of direct causal links stated in terms of covariations and temporal sequences for reasons of explanation, measurement, and testing. Consider two concepts: sales productivity (number of sales made, for example) and reference group. French found that productivity among salesmen was associated with social level of their reference group as well as effort expended.\(^{45}\)

The important question that should always be asked after being given a statement of hypothesis such as this is how does the reference-group phenomenon influence or affect productivity? (The apparent relationship between the two concepts is that identification with high-status reference groups stimulates levels of aspiration, which then motivate the salesman to greater effort even at the risk of violating the norms of the immediate group of colleague salesman.) It would be unusual of course to have complete accuracy in marketing and the behavioral sciences in general. Accuracy must be considered as a relative quality and not in absolute terms. In some ways it is related to degree of precision. We can say that a certain behavior is accounted for—or explained by—the life style of the actor. This statement is rather accurate given its vague all inclusiveness but not very precise; certainly not as precise as breaking life style down into principal component parts and explaining behavior in terms of these parts. Accuracy is also related to control. The more control one has over a system of variables the more accurate an explanation will be.

**THE ROLE OF EXPLANATION IN DEVELOPING MARKETING STRATEGY**

Ultimately, the value of studying the process of scientific explanation in a consumer context is that it enables marketers to improve the efficacy of their actions. The explanations obtained must somehow highlight or provide clues and insights resulting in more effective marketing strategies. An illustration is presented below.

**ILLUSTRATION**

One common marketing situation concerns the behavioral aspects of the dyadic interaction between customers and salesmen in creative selling situations. The problem can be translated into an exchange theory issue. The empirical marketing observation may be simply that customers appear to be more attracted to salesmen whose psychosocial traits are perceived similar to their own. This is the explanandum. We then proceed to translate this marketing fact or phenomenon into a theoretical issue, the explanans. This process of utilizing explanations in marketing is treated below as a series of steps.\(^{46}\)

**Step One** First it is necessary to state the explanandum: Consumers are more attracted to salesmen whose psychosocial traits are perceived as similar to their own.

**Step Two** Consider now a possible explanans: "An individual may be attracted to others because associating with them is intrinsically gratifying or because the association furnished extrinsic benefits for him."\(^{47}\)

Intrinsic rewards received from others include social approval by one's peers, or the feeling of security brought about by being with people whose opinions or values are like one's own. Intrinsic rewards are highly subjective; extrinsic rewards are more objective. Alternative sources of extrinsic rewards are easier to compare than in the case of intrinsic rewards. Advice and material assistance are examples of extrinsic rewards other people provide. The individual receiving either or both of these rewards may, in turn, provide the other person with intrinsic and/or extrinsic gratification. In this case an

\(^{43}\) Blalock, "The Measurement Problem: A Gap Between the Languages of Theory and Research."

\(^{44}\) Gerald Zaltman, "Marketing Inference in the Behavioral Sciences."

\(^{45}\) Cecil L. French, "Correlates of Success in Retail Selling."

\(^{46}\) The discussion is adapted from Zaltman, "Marketing Inference in the Behavioral Sciences." Reprinted from *Journal of Marketing*, published by the American Marketing Association.

exchange relationship comes into existence. For convenience in this example, this relationship will be viewed through the eyes of just one party. An assumption is made that a sale is a function of attraction.

The theoretical statement above identifies three variables: intrinsic gratification, extrinsic gratification, and attractiveness. The statement indicates that attractiveness is a result of, or is dependent upon, one or both of the other two variables.

Step Three The third step is to derive an empirical statement describing the functioning of the theoretical proposition in a marketing context. The empirical statement might be as follows: A consumer may be attracted to a salesman because the salesman is perceived to be supportive of the consumer’s value system (the intrinsic reward) or because the salesman provides needed material assistance (the extrinsic reward).

Step Four The implications of the empirical statement are shown in Figure 6.2, which depicts four selling situations. The ideal situation exists when the consumer receives both high intrinsic rewards (he believes the salesman holds views similar to his own on important matters) and high extrinsic rewards (the product is perceived to be of good quality). The likelihood of a sale is high when the consumer finds the salesman personally attractive and the product or service the salesman represents appealing. By reverse analogy, the situation in cell 4 is bleak; neither the salesman nor his product provides the consumer with any satisfaction.

Cells 2 and 3 represent rather interesting states. Consumers in these two cells might be in a state of cognitive inconsistency or imbalance. The resulting cognitive strain toward consistency could cause consumers to move toward either cell 1 or cell 4 depending on the relative magnitude of the intrinsic and extrinsic rewards.

It is the task of promotional efforts to shift consumers in cells 2 and 3 to cell 1. Because of their possible cognitive imbalance and consequent strain toward consistency, consumers in these cells would probably respond to promotional efforts; they are already disposed toward change. Consumers in cell 4 may display the greatest sales resistance.

Step Five At this point it becomes necessary to outline the appropriate strategy or strategies.

Assume that a sales manager with limited resources has obtained data describing the relative importance consumers place on intrinsic and extrinsic rewards. Because of his limited resources, the manager may do only one of two things: (1) He may attempt to increase the intrinsic appeal of the selling situation for the consumer. This could be accomplished by identifying consumer groups on the basis of sociopsychological variables, and by recruiting or reassigning salesmen so that there is a greater matching between salesman

and consumer on those variables. (2) He may use his resources to increase the extrinsic appeal of the selling situation through an advertising campaign stressing the advantages of the particular product, or by a training program giving salesmen more knowledge about customer needs and uses for the product.

In analyzing the data, the manager will be concerned with (1) the frequency with which consumers fall into each of the four cells in Figure 6.2; (2) which of the two situations, cells 2 or 3, has the largest number of consumers; and (3) the frequency of sales among consumers in each cell.

Step Six The final step is to implement the appropriate strategy. Before doing this on a large scale, however, it may be very desirable to test the implications of both steps four and five through test marketing, survey research, controlled laboratory experiments, simulation, or other suitable techniques.

![Figure 6.2 Reward conditions and market implications.](image-url)