

MARKETING MODELS
OF
CONSUMER BEHAVIOR

by

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B.A HAMILTON COLLEGE

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ABSTRACT

A review of the literature on consumer behavior was performed with the primary purpose of developing a sound theoretical grounding in the field, and a secondary purpose of presenting a variety of models which could help the marketing manager in his or her fundamental understanding of the consumer.

The interdisciplinary nature of the field is recognized and an overview of the various contributions of the social and behavioral sciences is presented. Subsequently, criteria useful for evaluating and categorizing models are developed.

The main body of the work contains an extensive section on behavioral models of consumer behavior, whereby four large system approaches are described and evaluated. In addition, a treatment of decision rules and some current topics is offered.

A smaller section is devoted to stochastic models of the field, with an associate section on current topics and trends.

Conclusions are developed throughout the thesis with some general comments at the end.

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INTRODUCTION

It is hard to envision a thorough mathematical treatment of the collective (un)consciousness. Such I presume would be adequate foundation for the true consumer model. It is not the purpose of this thesis to develop such a model, but rather to provide insight into some of the varying perspectives and approaches used. My perspective is that of an aspirant manager fulfilling an academic requirement; I consequently will have an eye out both for applicability and theoretical rigor.

Consumer behavior as a field can be seen as very old or relatively new depending on your point of view.

Attempts to explain/predict/troubleshoot/manipulate behavior have been made since the dawn of our mutual awareness. Since all interaction can be seen as an exchange, all behavioral studies are relevant to and in some way define consumerism.

Hilbroner's work, The Worldly Philosophers (1967) serves as a good review of historic insights of human economic behavior. Here the phenomena of consumerism was a much more primeval one with individuals competing for resources to survive foremost and to attain power and wealth thereafter -- usually at the direct expense of his neighbor. I do not intend to review the various views of Smith, Malthus, Ricardo, Marx, Veblen, and Keynes but wish to stress that their contributions to our understanding of the motivation of Economic Man is considerable and thus make the study of consumer behavior very old indeed.

On the other hand, the concept of consumerism now (at least in the

industrial world) has a much different flavor. Industrialization has caused us to efficiently cultivate resources and consequently enhance the supply side of our economy. It is now the firms who compete for consumer attention and the concept of consumerism much less aggressive. The consumer is now seen as a self-managing unit who manifests certain behaviors in reaction to the routinized or controlled settings of contemporary markets. So the field of industrialized consumer behavior is relatively new insofar as most of the specific research has been generated within the past thirty years. But within this time span the body of consumer behavior studies has grown at an accelerated rate. This proliferation has occurred for many reasons. Berkman and Gilson (1978) have suggested three:

1) The centrality of the consumer in contemporary marketing practice.

2) The interdisciplinary nature of the field which permits borrowing from many older disciplines.

and 3) The growth of computer technology, which has enabled researchers to "simulate" consumer behavior.

While I remain skeptical about the true state of computer simulation of behavior, I do feel that the computer's ability to analyze huge amounts of data has been a major factor to the field's growth.

The centrality of the consumer to a firm's marketing effort will be touched on throughout the work; moreover, I would like to quickly review the theoretic groundwork the various disciplines have laid for the field.

Section I -- Overview and First Pass

Chapter one: DICIPLINED PERSPECTIVES

The ensuing discussion is inherently unfair. Much of the richness of the following approaches is necessarily lost through compression. Nonetheless it can be said that consumer behavior theory draws heavily from six other formal fields. They are: Economics, Psychology, Social Psychology, Sociology, Cultural Anthropology, and Mathematics. What follows is a brief discussion of each fields perspective and associate contribution to understanding consumer behavior.

Classic Economic Perspective.

The two cornerstones of classic economic theory is that consumers are rational and that they maximize their utility. Linking the quantity of a particular good is the law of diminishing marginal utility. This law is equated to consumer spending through the observation that consumers are constrained by a budget and hence maximize utility by buying goods in ratios to one another such that the marginal utility per dollar spent on each good is equal.

Operationalizing the concept of utility has long been a problem for economists. One useful extension along these lines was through the development of indifference theory where consumers express thsir indifference between two bundles of varying quantities of two goods. A mapping of the indifferent trade-off between bundle sizes -- given a level of total utility -- reveals an indifference curve. Plotting a number of such curves at various total utility levels generates an indifference map. Imposition of a budget constraint which considers the price of the alternative goods reveals optimum consumption ratios

through the maximization of utility. We do not, however, live in a two good world, and while indifference theory may nicely illustrate the concept of utility, it does not handily operationalize it.

Economists interested in predicting as well as explaining often turn to the process of product categorization and then proceed to observe consumption patterns as a function of other variables. One such variable is income, and the resulting analysis takes the form of rising income theory.

Extended Economic Perspective.

While classic economics does provide fundamental insight into consumer economic behavior, it is often criticized for its assumptions of individual rationality and associated utility maximization. Extensions of the theoretic framework have addressed these issues to a certain extent. As for the rational consumer, economic thought has developed or borrowed theories explaining changes in individual preferences over time. With changing preferences the concept of rationality becomes more academic and less vulnerable. Effects of advertising, opinions of other consumers, changing prices, etc. are thus integratable into the perspective.

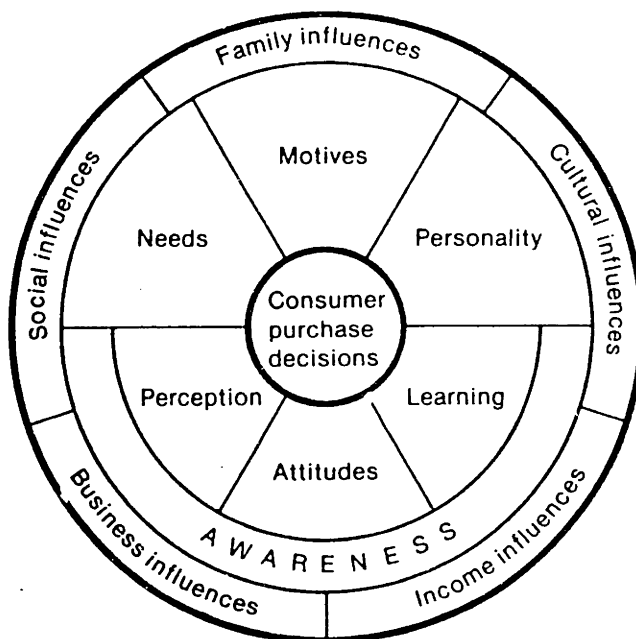
By linking utility to certain behavioral phenomena such as preference, choice, and uncertainty ... highly complex functions are developed and the theory extended.

Behavioral Sciences Perspective

The behavioral sciences of Psychology, Social Psychology, and Cultural Anthropology are currently the dominant influencers of consumer behavior theory. Here the consumer is viewed as an entity among

entities varying in personal traits and backed up by social and socio-cultural influences. This situation is depicted by Walters (1978) in figure 1.1.

Figure 1.1



The behavioral perspective is necessarily salient, biological or physiological bases of behavior are more fundamental. Such a level is provoking. Kassarian and Robertson (1973, p. xiii) conjecture:

Using this approach, the researcher would attempt to tie behavior to physiological correlates. For example: The field of genetics is just beginning to scratch the surface of a very exciting body of knowledge. It may well be that genetic structures are related to consumer choice and decision processes. As yet we know very little about blood chemistry or neurological functioning and their relationship to needs and motives. Some day this might help us determine preference for chocolate ice cream over custard pudding.

Such an approach, while interesting, is beyond the scope of this

work. I limit my discussion to the behavioral sciences.

Experimental Psychological Theory.

The general perspective of experimental psychology is to focus on the individual microscopically. Such study seeks to identify the innerworkings and underpinnings of human behavior. A common scenario to this approach is likening the individual to a 'black box' with inputs being environmental stimuli and the resultant output being behavior. The black box itself is often thought of as genetic endowment. Particular emphasis has been placed on the learning process. Two general approaches are cognitive theory and behaviorism.

Cognitive Theory. With little question this is the most widely employed approach used to understanding individual consumer behavior. The theory focusses on purchase activity in a problem solving framework. Key processes are: perception, information processing, and decision making. This approach assumes a choice environment and involves a variety of concepts including: motivation, attention, memory, communication/perceptual systems, information acquisition patterns, processing capacity, learning, and involvement. More will be discussed about this approach later in the work.

Behaviorism. This branch of experimental psychology generally views buying behavior as a simple stimulus-response relationship, whereas specific responses increase or decrease in frequency depending on positive/negative reinforcement patterns.

Repetition is a key concept of this view and the individual is seen as being conditioned -- a concept dear to the advertising agency heart.

The problem with this perspective is its mechanistic view of the

consumer.

Psychoanalytic Psychology. In contrast to the underlying assumption of the previously mentioned learning theories that virtually all behavior is acquired through experience, psychoanalytic theory assumes that behavior is a product of dealing with a host of instinctual needs -- many of which are quite anti-social. Here concepts such as defense mechanisms, rationalization, and projection of feelings are shown to be the products of deep psychological innerworkings (to which products appeal). The theory is rich with symbolism and is quite difficult to test empirically. Hence, it has fallen out of favor as an operational pillar of consumer behavior. Social Psychological Theory.

Because individuals must necessarily be viewed in a social context, many social sociological theories help form models of consumer behavior.

Drawing on a number of more fundamental perspectives, a number of stereotypical scenarios of buyer behavior have been presented: the Marshallian, Pavlovian, Freudian, Veblenian, and Hobbesian buyers to name just a few. These consumer archetypes, while enlightening, are individually incomplete in describing the whole of consumer behavior. Furthermore, as a collection they also fail to capture all consumer phenomena. As a consequence social psychological theory has developed in relation to specific aspects of consumer behavior phenomena. Listed here are three general theoretical areas where such work contributes significantly to understanding consumer behavior.

Motivation. A thorough treatment of motivation comes from Maslow (1951). He believed that an individual is born with a basic set of needs with society playing an important role in determining how these

needs are fulfilled. Maslow's theory of motivation stems from his research into what he viewed as an individuals basic hierarchy of needs broken down into three categories: physical, social, and self. Specifically:

PHYSICAL

- Physiological Needs. The needs for food, drink, physical protection/ shelter, and relief from pain.
- Safety Needs. Including both physical needs and the need to feel secure from threatening events.

SOCIAL

- Belongingness and Love needs. Reflecting the need to become part of a social group with which to interact and become important to.
- Esteem and Status Needs. Reflecting the want to be in high standing relative to others.

SELF

- Self Actualization Needs. Reflecting the desire to utilize abilities and knowlege so as to realize ones full potential.

In a later work Maslow added the need to know and understand as well as asthetic needs. He argued that individuals strive to achieve these needs in order. As need satiation occurs its associate motivating force is said to be reduced, except in the case of self-actualization which is said to be heightened by previous successful self-expression.

Another contributor to the literature on motivation is McClelland

who proposed that people are not only born with but learn needs. These needs are said to be acquired through socialization center around:

- Achievement
- Affiliation
- Power

Other insights into motivation comes from Freud. He suggested that basic motives are acquired in early childhood and are subsequently suppressed. This results in people who are not necessarily overtly aware of what is motivating them.

Cognitive Dissonance. This theory stands as a contribution to understanding the role of beliefs, attitudes, values, and intentions in consumer behavior. When people behave contrary to their internal beliefs, attitudes, or intentions they are said to incur cognitive dissonance. Controlling behavior is then seen as somewhat of a management process of such dissonance levels.

An example of this would be when an individual believes they should save for the future yet spends money in what even they perceive as a reckless manner.

Much of social psychology is concerned with how individuals acquire these beliefs and attitudes in the first place and what form they take. Beliefs are generally considered to be descriptive thoughts that people hold about something. Attitudes describe an individuals enduring evaluations, feelings, and action tendencies towards an object or idea. Values are usually seen as lying in a structure of what is important to an individual; values on one hand can be likened to beliefs when ordered categorically and on the other likened to attitudes when viewed

over time. Understanding behavioral makeup along these lines is critical to effective product development and positioning.

Attribution Theory. Quite generally attribution theory deals with how people model that of which they are aware in a cause and effect fashion. Specifically it has been said to deal with:

- the process through which people determine the cause of events.
- How a person infers something about another person based on their behavior.
- How people determine causes about their own behavior.
- What kind of attributions about success and failure are made in certain kinds of situations.

Sociological Theory.

Sociologists have developed constructs significant to the understanding of consumer behavior through their study of social interaction, social organization, and culture. Here the transaction process is seen as occurring between groups of buyers and sellers with both group and individual pressures guiding outcome.

Contributions of Sociology to consumer behavior take many forms. Such as:

Population Studies. Knowledge about population factors such as sex, age, education, employment, marital status, geographic location, etc. have aided significantly in determining the type and quality of markets. Such an analysis provides the basis for consumer segmentation and does much towards explaining differential purchase behavior.

Motivation. Extending Maslow's theory, the sociological

perspective focuses on social needs as an area of inquiry. Social class, status, leisure, and recreation are examples.

Ecology. Knowledge about the spacial and temporal distribution and diffusion of consumers and market institutions is an extension of social ecology. Change in urban, suburban, exurban, and rural markets becomes important in developing normative marketing models of consumerism.

Individual Directionality. Sociologist David Reisman (1961) has suggested that societies are made up of three basic types:

- 1) Tradition Directed. Characterizing individuals and societies as being slow changing and family oriented and who experience little social mobility .
- 2) Inner Directed. Referring to societies experiencing greater mobility, industrialization, and accumulation of wealth. Inner directed individuals are characteristically self-controlled, goal oriented, and innovative. Diffusion of innovation studies focus on this group of individuals as opinion leaders.
- 3) Other Directed. Such a group is characterized as being more concerned with peer expectation that personal achievement and satisfaction. Other directed societies are generally seen as socializing their members as consumers rather rather than producers.

This type of segmentation is particularly useful in developing marketing strategies insofar as the product and associate appeal is most

effective when harmonious with the prevailing nature of the target group.

Role Theory. There are three components of this perspective as it applies to consumer behavior. First, roles can be seen as a spinnoff of status whereby the purchase and visible use of a product can be seen as a form of image presentation (role playing) to an audience.

Second, the notion of role is important in the analysis of relationships be they professional or personal. A role in this context can be seen as a socialized code of behavior which individuals are expected to follow when interacting with other individuals. As I have suggested, all interaction can be seen as an exchange. This concept of role is therefore central to all marketing phenomena. It has further been suggested that role relationships, rather than individuals, are the fundamental units of analysis in marketing (Bagozzi, 1978).

Third, the concept of role becomes particularly important in the area of group decision making. A group decision making process can be seen as being made up of a variety of member actors. Six roles have been outlined (Zaltman and Wallendorf, 1978): 1) Gatekeeper, person who determines whether others hear about or come across a product or service, 2) Influencer, one who helps shape another's evaluation of a product, 3) Decision maker, one who ultimately decides on a product, 4) Buyer, one who implements the decision, 5) User, one who employs the product or service to some end, and 6) Affectee, a person who experiences the indirect consequences of another's use of the product.

Cultural Anthropology Theory.

Featured less prominently than the other behavioral sciences

in consumer behavior, cultural anthropology is concerned with the study of mankind in a framework of cultural evolution. Along these lines the concepts of taboos, folklore, cultural roles, standards, and themes become useful to marketers in explaining consumer resistance or acceptance of innovation or media message.

Chapter Two: GENERAL MODEL - THEORY CRITERIA

The Modeling Approach. Models can generally be considered to be representations of larger systems which through the specification of variables and associate interrelationships, identify, explain or predict phenomena within that system. Theories, on the other hand can be considered to be fundamental suggestions about why a particular phenomena occurs. Models in this framework are thus viewed as compound descriptions using theories as a basis. Models can further be viewed as simulations, providing a synthesis of reality.

Evaluating Models. The evaluation of a model rests with its performance, and the performance of a model depends heavily on who is expecting what from it. A manager for instance is likely to expect a model to be normative and therefore useful in decision support. An academic in contrast is likely to expect a model to be more descriptive or robust. While an integrated attempt to evaluate the various consumer models on the basis of a fixed set of criteria is not undertaken in this work, I would like the reader to keep some criteria in mind while forming their own conclusions.

A general set of criteria is needed to provide a more thorough and ongoing evaluation. Zaltman & Wallendorf (1979) have proposed that a model should be:

- 1) Capable of explanation as well as prediction
- 2) General
- 3) High in heuristic power
- 4) High in unifying power
- 5) Internally consistent
- 6) Original
- 7) Plausible
- 8) Simple
- 9) Supported by the facts
- 10) Verifiable

While this is a good general list, I question their emphasis on generality, originality, and simplicity. A model must not necessarily be general to be of value, this must necessarily depend on the range of phenomena one is seeking to model. Furthermore, a model need not be totally original to be useful either. And finally, a model it seems should strive more towards understandability rather than simplicity. Speaking from a more academic vantage, Howard (1973) offers three additional suggestions, whereby models should:

- 1) Incorporate mainstream thinking from principal avenues of research
- 2) Have the property of suggesting clear areas for fruitful further research
- 3) Include measures and definitions of its elements to meet the

above criteria.

Finally, from a distinctly normative point of view, Little (1975) suggests that a manager needs "a model based set of procedures

whereby he can bring data and judgements to bear on his decisions whereby the model is":

- 1) Understandable
- 2) Robust -- meaning that the user cannot push it to its extremes
- 3) Evolutionary
- 4) Easy to use

Model Classification. Through the breadth of the behavioral sciences, consumer models of many types have been developed. There are consequently many ways they can be viewed in relation to one another. For the purposes of this paper I find it useful in examining consumer behavior models in terms of their scope, scale, and depth of analysis.

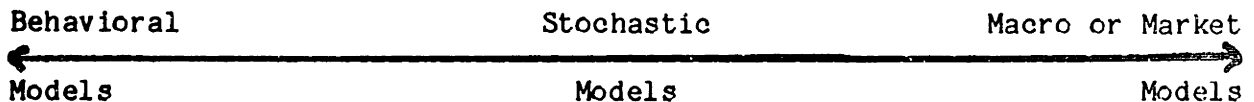
By scope I generally refer to the breadth of phenomena addressed or treated by the model. Here the degree to which a model unifies a host of theories in its attempt to map the whole (larger scope) or part (smaller scope) of the system in question.

By scale I generally refer to the level of aggregation. Large scale models define their system or constructs in a fashion whereby the basic unit of analysis is an aggregation of individuals or households, and small scale models concentrate on illuminating the discrete action of individuals.

Finally, by depth of analysis I refer to the ambition of the model in assessing causation. This can be expressed in terms of the models purpose and outlined along distinct analytic levels whereby the model can be said to:

- 1) Identify all or a distinct portion of the variables making up a behavioral system.
- 2) Explain fundamental relationships between the identified variables.
- 3) Demonstrate steps or flows in the operational relationship among the variables.
- 4) Specify exact cause and effect (including feedbacks) between variables and relationships.
- 5) Perform sensitivity analysis so as to quantify impact of changes in the outlined variables.

On another level, and for the organizational purposes of this work, consumer behavior models can intuitively be divided into three categories : 1) behavioral models, 2) stochastic models, and 3) macro market models. It must be emphasized that these categories are not absolute but rather they can be seen as lying on a continuum.



Behavioral Models. Drawing heavily from the behavioral sciences, these models are generally considered to be by their constituency to be substantive models; that is, models which explicitly state variables and their interrelationships (ie. depthfull). They are generally deterministic and they focus on the individual (lesser scale). For these reasons such models are extremely useful for explaining individual differences (heterogeneity).

While the testing of these models is based on empirical data, development of hypotheses and associate language is necessarily subjective due to the direct unobservability of the internal (personal)

processes in question. While behavioral models ultimately claim to be predictive, their complexity makes them somewhat unwieldy for managers who wish to make projections over aggregated market segments. The ultimate power of behavioral models seems to lie with their microscopic analysis of the consumer decision making process. This power makes them useful in assessing consumer preference functions and therefore assists in effective new product design and positioning. This power also provides insights into the persuasibility of consumers and therefore contributes to the design and execution of media or direct sales campaigns. Other uses will be discussed later in the work.

Macro/Market Models. These are models which describe and/or predict market changes without resorting to explanation at the individual level (large scale). These models are often seen by their constituency as empirically pure insofar as they draw conclusions from directly observable market data. These models usually operate on the aggregate because of current limitations of market data collection; movement towards calibrated markets, however, should remedy this situation. Proponents of these models view them as objective insofar as their results and associate assertions are drawn strictly from "regularities in the data". Market models often incorporate explanatory variables such as advertising or promotion expenditures and are therefore considered useful tools for forging management policy.

Stochastic Models. This genre of consumer models views consumer behavior to be the outcome of some probabilistic process. The conviction of the constituency of these models varies from one of pragmatism -- where the use of probability distributions is seen as an

effective means for dealing with our inability to accurately determine behavior (Montgomery & Ryans, 1973) -- to one of unassailable allegiance -- where fundamental bases for behavior are said to be stochastic (Bass, 1974). Stochastic models do present a means of representing complex behavior with relatively manageable models. They are predictive in nature and find central use to managers in predicting market trends. They are shown as central on the categorical continuum because they can be aggregated into macro/market models (Jones, 1979) and because they can be made to include many stochastic elements serving to represent behavioral factors not explicitly considered. The task for users of stochastic models is then to isolate the behavior of interest (ie. brand switching, adoption,...) and then specify to appropriate probability laws.

For the purposes of this work only models of the behavioral and stochastic classifications will be treated in more depth.

While it is my belief that stochastic models are currently more adaptable to a wider variety of managerial decision situations and that they will continue to evolve into the behavioral realm, it will be the present behavioral work which will provide the theoretical basis for this growth of stochastic scope.

Chapter Three: STOCHASTIC MODELS OF CONSUMER BEHAVIOR

The purpose of this section is to provide a review of stochastic models which have found some managerial use in mapping consumer behavior.

Because the purchase probabilities or parameters of stochastic models are generally developed from historic data, they are most

commonly used for frequently purchased goods. Data on infrequently purchased goods such as durables is not as abundant. Furthermore, the purchase process for durables is more complex, involving more people and influences, and is thus more difficult to model.

First considered in this review are five basic models: Bernoulli, Hendry, Markov, Linear learning, and Negative Binomial Distribution. Categorization of stochastic models in general and these in particular can be done on the basis of the scope, scale, and depth of analysis framework outlined previously.

Scope. As suggested, by scope I mean the breadth of phenomena addressed or covered by the model. The basic models covered in this section are generally of moderate scope insofar as their use has predominantly been for prediction of market sales trends for specific products in specific contexts.

one level of phenomena addressed by stochastic models is evolved with the measurement of product performance. A list of such measures is:

- Brand share
- Brand switching/loyalty
- Brand penetration
- Brand purchase frequency

For the most part, the models discussed here address but one or two of these measures. Hybrid models, which generate multiple measurement statistics, exist and continue to evolve and will be touched on in the Current Topics section of the chapter. As far the basic models presented here, the measurement statistics they are concerned with is

presented in Table 3.1.

Table 3.1

	Bernoulli	Hendry	Markov	Linear learning	NBD
Brand share	x		x	x	
Brand switching/loyalty		x		x	
Brand penetration					x
Brand purchase frequency					x

Another aspect of stochastic model scope is the degree to which external market factors are considered. Factors, such as company tactics and changes in economic considerations can be seen to affect the purchase probabilities of consumers. Except for a version of the linear learning model, the basic examples presented here do not explicitly consider such external factors. More complicated models are evolving and this issue is further addressed in the section on "adding explanatory variable".

Scale. Because of the prevalent use of stochastic models for prediction, they generally provide an aggregate treatment and are consequently large in scale. The notion of population heterogeneity is dealt with by combining the predictions of a number of smaller scale stochastic models, each representing relatively homogeneous market segments, into a larger scale aggregate prediction. The degree to which heterogeneity is encompassed depends on the relative homogeneity of the basic unit of analysis (segment) considered. Thus, the scale of these

models is a methodological consideration and varies by the application.

Depth of Analysis. The issue here operates on two levels. First is the continuing philosophic issue of empirical versus hypothesis testing approaches to science. The NBB model resents an empirical description of the regularities of market data - it is thorough in its probe but it does not hypothesize on the nature of causes underlying the regularity and thus lacks depth as has been noted in my framework. On the other hand, the linear learning and higher-order Markov models hypothesize that past purchase experience does matter and is therefore, more helpful in the analysis of consumer behavior.

The second level concerns the level of behavioral analysis incorporated in a stochastic model once the hypothesis testing approach has been adopted. The basic models treated here are all quite shallow in this regard. Except for the linear learning model and high order Markov processes, which pay homage to consumer learning in a simple direct fashion, no behavioral variable are part of their explicit design. The further inclusion of such behavioral variables and the associated acknowledgement of a deterministic aspect of the phenomena is also brushed on in the "current topics section", and represents an indication of where stochastic models of buyer behavior are headed.

The Bernoulli Model.

This stochastic model form is commonly referred to as a zero-order model indicating that while consumer purchase probabilities can change from trial to trial. This change is not influenced by the consumer's purchase history. In behavioral terms this implies that no learning takes place. This assumption, while intuitively unsettling, is said to

be justified by the fact that situational factors may well overwhelm feedback (learning) effects from past purchases. The purchase probability in a zero-order model may be externally adjusted in order to accomodate these situational variables. Without such adjustments ,however, the model assumes a population of customers with an unchanging probability of purchase. These unchanging purchase probabilities are then said to be distributed in some fashion among individuals of a population.

While the Bernoulli model is rather simplistic, it maintains two reasons for attention: first, it has been found to fit data fairly well , and second, it carries concepts which are fundamental to many more complex stochastic models.

The Hendry Model.

This model, developed by the Hendry Corporation, is another example of a zero-order stochastic process , one which has gained widespread managerial use . This acceptance is due to the systematic way in which the model is implemented. The Hendry model can be seen as a two part system: the first part involving the partitioning of a product class under scrutiny, the second part involving actual stochastic prediction.

Product Class Partitioning. From a managerial standpoint, the notion of partitioning is a quite useful one . In this model it is observed that a consumer market can be broken down into a hierarchy of consumer preferences for product attributes. Such an analysis leads to the identification of mutually exclusive and exhaustive market partitions or segments.

The specific nature of this partitioning is developed on the basis

of managerial judgement. Managers are questioned about which brands they feel competes most closely and these judgements are then tested against actual brand switching data. Should the market data not agree with the managerial observations, the process is repeated with the manager being solicited for their second best guess about the competitive structure.

After one or more such iterations, a market structure is found which reasonably fits the empirical data. A preference structure developed in this way provides a useful framework for evaluating the relative performance of brands.

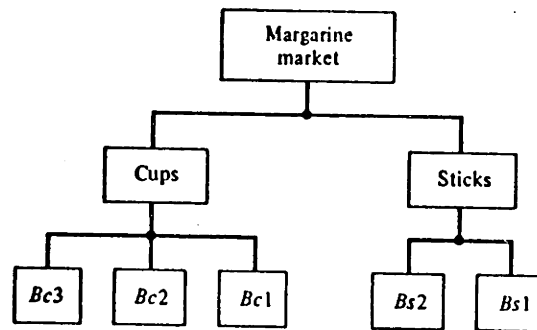
It should be noted that certain assumptions about what partitions should be like are used in applying the market data to the judgementally generated structures. These assumptions are that switching between brands in a partition -- that is switching between brands considered in direct competition -- is a zero-order choice process and is proportional to brand share. Hence for a consumer who switches from brand i , his/her expected probability of buying brand h is proportional to the market share of brand h . Represented by:

$$P_{h/i} = k_i s_h \quad \text{for all } i = h$$

where k_i is the switching constant and s_h is the market share for brand h . Furthermore, within each partition, each brand is required to have the same switching constant. The intuitive significance of k is that it represents the degree of heterogeneity of consumer brand preferences. Furthermore, each partition is treated as a separate market and is modeled as a heterogeneous, zero-order probability... thus constraining k to be less than unity.

In the Hendry approach, physical product attributes represent the branching points. An example of such a structure for the margarine market is shown in figure 3.1.

Figure 3.1: Form-primary margarine market.. (from Kalwani & Morrison, 1977, p. 473)



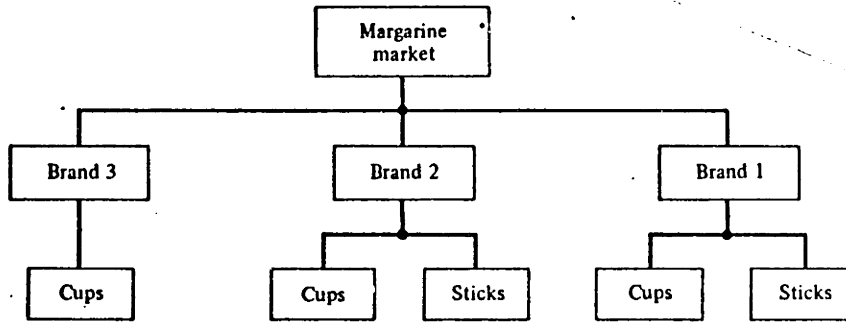
Here the normative result is that the margarine market can be viewed as 'form - primary' whereby packaging form is the first consideration to customers. On the other hand, the structure for the margarine market might well be determined to be 'brand - primary' as shown in figure 3.2.

The normative implications of such differing structural interpretations is best outlined by Kalwani & Morrison (1977, p. 473)

The identification of the partitioning structure in a market has several practical implications. These implications can best be described by comparing the above structure with a brand-primary margarine market. Using the assumptions above, a brand-primary margarine market can be represented as shown.

Firstly, in the form-primary market, the consumers exhibit lower brand-name loyalties than in the brand primary market. Secondly, five separate brands are perceived by consumers in the form-primary margarine

Figure 3.2, Brand-primary margarine market (p.473)

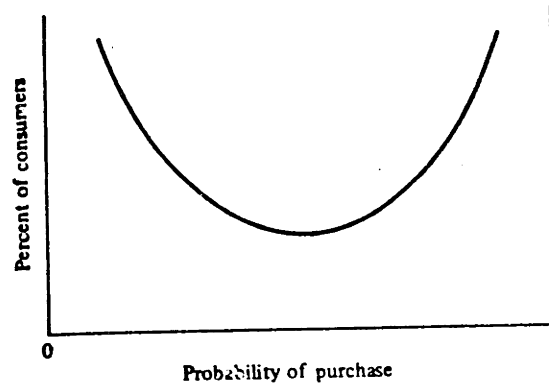


market. The firm manufacturing Brand 1 (say, Firm 1) has to promote its two forms of margarine separately. On the other hand, in the brand-primary case, firm 1 could promote its two product types (Bc1 and Bs1) together. Finally, if firm 3 wanted to introduce margarine in stick form in the brand-primary case, it would experience a certain amount of "cannibalism." On the other hand, in the form-primary case, if Firm 3 introduced margarine in stick form, it would end up getting a share in the 'sticks' partition which would be independent of its share in the 'cups' partition.

Stochastic Prediction. This part of the Hendry model is concerned basically with the purchase probability distribution used in representing the heterogeneous nature of consumer behavior. This distribution (shown in figure 3.3 for a specific brand) is used for predictive purposes within the brand partitions.

The shape of the distribution reflects the assumption that most consumers become brand loyal and hence either usually purchase the brand or do not. It is based on this assumption, not on empirical facts, that the Hendry model makes predictions. Nonetheless, the bathtub curve does have intuitive appeal.

Figure 3.3, Bathtub-shaped purchase - probability distribution:



The Hendry model represents one good way to develop a hierarchy of consumer preference. Other methods have been suggested. For a more complete discussion, see Urban & Hauser (1980).

Markov Models. The Markov model is based on the assumption that the probability of purchase for an alternative is a function of what the consumer has previously purchased. The simplest of Markov models (a first-order model) considers only the influences the immediately previous purchase has on the current purchase probability (state at time t). Predictions for purchase in time $t+1$ can therefore be represented -- given a two product world -- by the transition matrix shown in figure 3.4.

Where, for example, $P_{A,A}$ represents the conditional probability that a consumer will purchase brand A given he/she previously purchased

Figure 3.4:

		Brand Purchased at Choice Occation t+1	
		A	B
Brand Purchased at Choice Occation t	A	$P_{A,A}$	$P_{A,B}$
	B	$P_{B,A}$	$P_{B,B}$

brand A. The model requires that the sum of the probabilities in each row equals one.

Furthermore, if the transitional probabilities remain the same over time, that is in $t-1$, t , $t+1$..., then the model is said to be stationary and will yield an equilibrium result. There are reasons, however, why these probabilities will shift; external market factors for example, yet adjustment of the probabilities is (as with the Bernoulli and Hendry models) external to the system and must be done judgementally... or with another model.

Higher order Markov models -- models where probability of purchase depends on a past sequence of purchases -- can be transformed into first-order processes by simply redefining the state space. In the case of a two-brand market where transition probabilities depend on an individual's state (choice) at time t and $t-1$, the transition matrix shown in figure 3.5 is the result:

Where for example (A,A) at time t means purchase of product A at time $t-1$ and A again at t .

Needless to say, higher order Markov systems can be burdensom.

Figure 3.5:

		State at time $t + 1$			
		(A,A)	(B,A)	(A,B)	(B,B)
State at time t	(A,A)	$P_{A,A}$	-	$1-P_{A,A}$	-
	(B,A)	$P_{B,A}$	-	$1-P_{B,A}$	-
	(A,B)	-	$P_{A,B}$	-	$1-P_{A,B}$
	(B,B)	-	$P_{B,B}$	-	$1-P_{B,B}$

Consequently, single-order processes are frequently endorsed because of their simplicity and because as was suggested with zero-order processes, consumers often forgets or ignores his/her previous choice as a result of a variety of market distractions or perturbations.

Useful diagnostic information that comes from Markov models lies with their ability to point out general market trends. If such a model, used as a reference, points out an unfavorable trend... then firms can hopefully take early action designed to change the transitional probabilities.

Linear Learning Models. The basic concept behind the linear learning model is that the occurrence of a particular purchase increases the probability that that purchase will be made again. Likewise, if a product is rejected it will become more likely to be rejected in the future. Such a set of assumptions suggests perpetuating influence of choice occasion feedback and is therefore extreme in its consideration of past purchase influences. Learning in this case can be viewed as a form of self-fulfillment.

The mechanisms of this model entail two constructs: one for learning and one for rejection. They are for brand A:

Learning construct (operator):

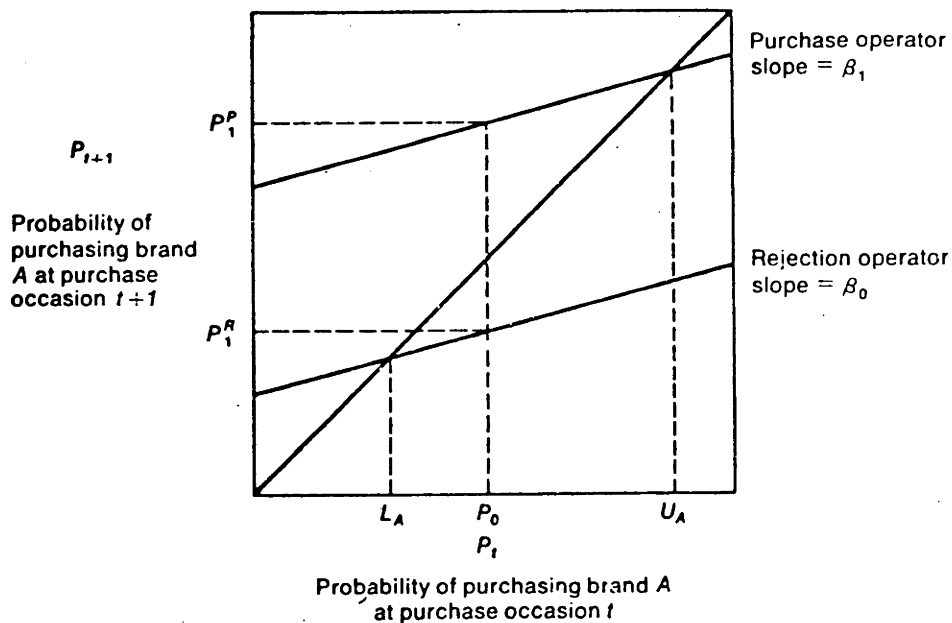
$$P(A/A)_{t+1} = \alpha_1 + \beta_1 P_t$$

Rejection construct (operator):

$$P(A/\text{not } A)_{t+1} = \alpha_0 + \beta_0 P_t$$

The resultant linear learning model is shown in figure 3.6.

Figure 3.6: Linear Learning Model: (from Montgomery and Ryans, 1973)



The figure further shows that the purchase probabilities have upper and lower bounds represented by U_A and L_A respectively. The purpose of

these bounds is to indicate that total learning or rejecting is not possible (ie. complete brand loyalty or disloyalty).

The underlying assumptions of such a model are questionable. In certain situations it may be argued that consumers will be less likely to purchase a brand if it had been purchased before (eg. for variety). Consequently, one must be sure that the market situation is compatible with the limiting assumptions of such a model before employing it normatively.

While the barebones linear learning model implicitly makes the assumption that external factors (such as marketing variables) do not effect the learning/rejection constructs, it may be modified to incorporate such factors. A simple example involving promotion is shown below with a modified learning construct.

$$P(A/A)_{t+1} = (\alpha_1 + \beta_1) \gamma + (1 - \gamma) (\text{promotional effect})$$

where $0 \leq \gamma \leq 1$

In this case the buyer could be characterized as habitual as γ approaches one, and promotion driven as γ approaches zero.

In spite of attempts to expand the robust nature of the linear learning model, its prime advantage seems to lie with its simplicity.

Negative Binomial Model. The interactive effects of choice timing on the choice process itself has been raised as an issue in modeling consumer behavior. For the models discussed so far the question of purchase frequency or timing is not considered. Research into the matter has shown that while such an effect does seem to exist... its

significance does not seem to be universal. (Ward & Robertson)

The Negative Binomial Model as presented by Ehrenberg (1959) represents a pure empirical work whose model building focus is centered on finding simple and basic regularities or patterns in consumer purchasing data. In this pursuit Ehrenberg found that patterns intrinsic to a diverse group of data sets followed a statistical model known as the negative binomial distribution (NBD).

The fundamental observation captured by the model is that the number of purchases made by individuals per time period takes the form of a Poisson distribution with parameter λ (purchase rate), suggesting that the interpurchase intervals are exponentially distributed and independent.

The NBD model observes heterogeneity in the population such that each consumer will be associated with a different Poisson parameter λ_i . In turn, these λ_i occur in frequency over the population according to a gamma distribution with exponent k .

These observations combined in a stochastic formulation results in a NBD distribution of purchases in any time period (usually 4, 12, 13 weeks). The model has two parameters: the overall mean m (the expected value of λ) and the exponent k . With estimates of these parameters the model generates two key measures of brand performance; they are, penetration and purchase frequency. Penetration is defined as the percentage of customers who buy a particular brand (or pack size) at least once in a time period. Purchase frequency is the average number of times said customers purchase said brand in the designated time period.

Another important use of the NBD model is in the analysis of repeat buying over multiple time periods. In order to generalize the NBD over multiple time periods the model is reformulated into a multivariate NBD with an associated probability generating function for any number of time periods of a specific length. Because the purchases of a particular consumer in successive time periods are independent Poisson variates, the probabilities for purchase in each time period can be combined conditionally to generate repeat purchase figures.

Furthermore, NBD's for various brands or pack sizes can be aggregated with consideration of: 1) how sub-group repeat purchase patterns compare with those of the population, and 2) how repeat purchase patterns for discrete items such as pack size compare with patterns for combinations of such items.

Results from NBD applications to actual purchase data show that it fails to fit the tails of the empirical distribution of purchases; That is, for very short time periods and for relatively large number of purchases. This failure is usually attributed to the dominance of the gamma assumption and the inability of the distribution to fit the tails of the λ distribution over the population. Another restriction of the NBD model is that it assumes the market is stationary, and the extent to which this is true or not should be assessed before applying the model. At the very least it can be used as a benchmark against which nonstationary market influences can be measured.

General Assessment. It must be stressed that in order to use stochastic models you must thoroughly understand them. Successful implementation requires knowledge of both their power and limitations;

both in terms of their theoretical grounding as true models of behavior and their de facto ability to match purchase phenomena. A working stochastic model can be likened to a hand tool which must occasionally be sharpened. And the more sophisticated the tool, the greater the skill required for operation.

Current Topics

An exhaustive treatment of the current work on the continuing development and application of stochastic models is beyond the scope of this paper. Nonetheless, it is important to present an idea of what kinds of issues are being looked at.

Consumer Heterogeneity. While heterogeneity has been shown as treatable by the models already presented, Jones (1973) took a different tack by allowing consumers to differ in both the type of stochastic process they followed (exhibited) and the process parameters themselves. In the Jones model, individuals are allocated to zero-order, Bernoulli, First-order markov, and linear learning segments. Givon and Horsky (1979) have since performed research serving as an extension of that of Jones. In the process of developing a composite model of consumer brand choice, they propose procedures for estimating composite model parameters and selecting the most appropriate submodel. Examination of data from five product categories showed that no single stochastic submodel could be construed as preferable over all product categories. Absolutely though, it was found that slightly more consumers appeared to be best described by the linear learning model, followed by the Bernoulli, and a markovian/bernoulli combination model.

Brand Switching/Loyalty. Herniter (1973) presented an interesting

framework for viewing brand brand switching behavior. He described the market as being made up of a number of subsets consisting of those who are steadfastly brand loyal, those who are willing to switch between each of the possible brand pairs, those who are willing to switch between each of the possible brand trios, etc.... (ie. $2 - 1$ subsets). Hertzner was then able to estimate switching by maximizing system entropy subject to constraints involving the subsets. The Hertzner model is attractive because it needs only the market share of the brands in question. Its drawback is that the data analysis involving so many subgroups can be quite cumbersome when applied to markets proliferate with competing brands.

Subsequently, Bass, Jeuland, and Wright (1976) have refined Hertzner's work and developed a model which while less encompassing of external factors, generates penetration, frequency, and switching statistics quite handily.

Finally, Jeuland (1979) developed a model of brand loyalty hinging on the notion of a brand inertia parameter. This parameter can be seen as a measure of the difference between short-term behavior and long-term behavior and is shown to provide a simple representation of carryover effects of marketing actions. Jeuland has subsequently provided another interpretation of the brand inertia parameter. He suggests that:

- A high inertia parameter implies that in the short run an individual buys a given brand. This relative exclusion of

other brands seems to indicate that purchases of a given brand are made at the expense of other brands and thus does imply (in a weak way perhaps) that there is competition between the brands studied. the inertia parameter] could be used to identify partitions of the market (in the Hendry sense).

- This remark is most interesting since the brand-inertia model is the Hendry switching constant model applied at the individual level.

Purchase Timing. In assessing the NBD model Jeuland(1981) has suggested that the use of a Poisson process to describe purchase timing is a first approximation. As has been outlined, the Poisson distribution presumes that purchase timing probabilities are distributed independently of time. Jeuland, Bass, and Wright (1980) point out that it would be useful for purchase timing probabilities to be considered as being distributed with respect to time. In such a system purchase probabilities could be adjusted down immediately after a purchase thus accounting for an inventory effect.

In their paper Jeuland et al feature the Erlang process as accomodating such a notion. This process asumes that the interpurchase times are gamma distributed. Jeuland offers this interpretation of the generated inventory effect:

- If there is an inventory effect, there is an underlying constraint corresponding to the intensity of the need that is catered to by the group of brands studied.

- Put it another way, the presence of a strong inventory effect suggests that the brands simultaneously analyzed do form a group.

- Consequently, the order of the purchase timing process corresponding to a group of brands is a measure of the extent to which this group of brands forms a partition (in the Hendry sense).

Adding Explanatory and Variables and Factors: Models falling under this heading can be categorized on the basis of the type of explanatory variables/factors they attempt to add. These variable types fall into two categories: 1) variables attempting to encompass behavioral underpinnings and 2) variables attempting to encompass marketing mix or market influences on purchase probability.

The Jeuland article (1980) previously cited can be seen as falling into the first category. The parameter of brand inertia represents a significant move towards a second generation of stochastic models serving

to more clearly and closely map consumer behavior.

As for models adding marketing mix variables, a few should be noted.

Price has been formulated into the linear learning model by Lilien (1974) and into the Markov process by Telser (1962). Zufryden (1973) incorporated media scheduling as an influencer of purchase probability, and Prasad (1972) evolved a method for bringing store selection into the picture.

Moreover, Jones and Zufryden (1980) recently developed a stochastic framework permitting the accommodation of any number or type of explanatory purchase variables. Central to the model is the use of logit regression analysis. The logit model, based on a theory

developed by McFadden (1970), is a regression function which translates preference values into purchase probabilities. The resultant model -- employing concepts of population heterogeneity and product class purchase frequency -- is shown to accept explanatory variables of either continuous or categorical forms. The model also provides a means for choosing the best from a set of potentially explanatory variables, and outlines how optimum marketing mix levels might be determined.

Summary

In the first part of this chapter, five basic types of stochastic models of consumer behavior were presented and analyzed. The purpose there was

to show from where developing stochastic models have come. The second part of the chapter outlined four current areas where work on stochastic models is being done. The purpose there was to indicate a few directions where such models are headed.

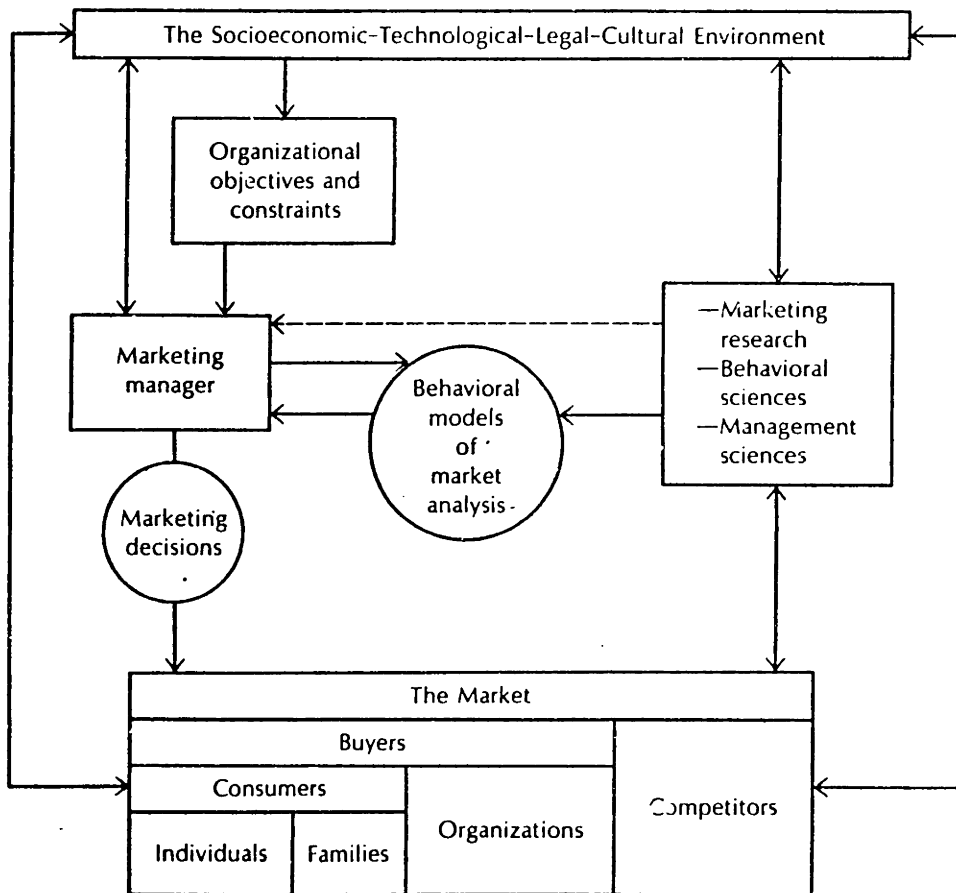
At this point, I would like to make a few further propositions.

- That for the purpose of describing mature markets, the empirical NBB approach, with its improvements, will be most effectively used.
- That for the purpose of product re-positioning, compound stochastic processes will be most useful in simulating consumer reactions to positioning alternatives.
- That for the purpose of new product development, complex stochastic models incorporating behavioral theory will be most useful in simulating consumer reactions to design alternatives.
- That the rivalry between stochastic and deterministic points of view will become moot.
- That the use of stochastic models will continue to be more effective for frequently purchased goods (e.g. consumer packaged goods) than for infrequently purchased goods (e.g. durable and specialty goods).

Section II — BEHAVIORAL MODELS, a closer look

The perspective of this section is that behavioral models of consumer behavior are the fundamental building blocks to marketing management. Nicosea and Wind (1977) have offered the following portrait of the role behavioral models of market analysis play in marketing management. (Figure II.1)

Figure II.1: The Role of Behavioral Models in Market Analysis
(from Nicosea and Wind, 1977, p3)



My feeling here is that marketers need to understand the consumer in a fundamental way. Such can be seen as laying solid strategic groundwork for interpreting, explaining, and taking action upon

developing market situations.

Treatment of all behavioral model types is not possible here. Rather the purpose of this section is twofold: first to give the reader an idea of what types of issues are being addressed in the consumer behavior field and second to provide an idea of how these issues are structured or linked in viewing the field as a whole.

In order to fulfill this promise three chapters are devoted. The first is concerned with treating the so called large System Models. These models may be characterized as theories of large scope whereby they account for (unify) considerably more variables than other types of models. Their strength is in the area of describing complex decision making processes. Their weakness is in the area of measurement and estimation insofar as these models are highly abstract. Operationalizing all the various definitions and measuring the associate variables (especially over time) represents a gargantuan task.

The second chapter deals with consumer decision rules or choice heuristics as they are also called. These rules are specific models of how consumers order information about a set of competing products and hence derive a product preference function. These rules are examples of behavioral models of a much narrower scope and can be viewed as components of the large system models. These choice heuristics are treated instead of other aspects (components) of consumer behavior because of their centrality to the overall phenomena. Through the observation and analysis of such rules a firm can gain a greater understanding on how consumers view their products in relation to other products and thus become more efficient at product design, support, and

communication.

The third chapter deals with current topics relating to consumer choice behavior being discussed or researched in the literature. It is hoped that from this section the reader will derive a richer perspective not gained through the specialized focus of the other behavioral sections. Also included in this chapter are a summary of my conclusions.

Chapter Four -- LARGE SYSTEM MODELS

In this section, three basic large system model structures are presented. They each represent a major conceptual scheme and its perspectives will illuminate the complex process of modeling consumer behavior.

The first model is drawn from James Bettman's work on information processing theory as it effects consumer behavior. The perspective of Bettman's approach is generally microscopic. He attempts to reduce consumer behavior to its fundamental process components. By specifying these processes, consumer behavior is viewed in an extremely deterministic (mechanistic) light. The theory is therefore quite broad in scope but on a

small scale. By virtue of its level of detail it is not a practical managerial tool per se. Rather, it can be seen as providing excellent background information to the manager who is striving for a greater understanding of the consumer. This would be especially true for the advertising manager who is designing strategies for presenting short spots of information to a population of consumers, in that the manager is naturally interested in optimizing the impact commercials and the like will have. Insight into the information processing characteristics of individuals is key to this end.

Next presented is the Howard/Sheth model of consumer behavior. The perspective of their approach can be seen as a step up from that of Bettman insofar as they are more interested in the cognitive or learning aspect of consumer behavior. The information processing approach does provide for learning but in a tedious building block fashion. The

Howard/Sheth framework provides a more general perspective demonstrating that consumers do learn and how that affects their buying behavior, rather than how consumers learn.

In conjunction with this treatment I have included a presentation of further insights provided subsequently by Howard. This work represents a solid attempt to apply some of the key concepts of the Howard/Sheth model. In this section, the degree to which learned consumer behavior is manifest as a function of consumer experience and product type is explored. This analysis represents a scaling up of the Howard/Sheth theory. The two sections in combination represent a theory of broad scope, whereby many concepts from economics and the behavioral sciences are unified.

The third model is that of Nicosia's. The perspective of his approach is much more of that of the operational model builder. His work represents an attempt to simulate firm and consumer interactions, and is flexible enough to include a variety of sub-models which no doubt could be generated from the analyses of Bettman, Howard and Sheth and others not explicitly mentioned in this treatment.

The Bettman Model.

James Bettman is well noted for presenting an integrated theory of consumer behavior from an information processing point of view. His recent work (1979) provides an analytic framework for understanding consumer behavior in the context of a choice environment where choice is viewed as a selection process among a set of alternatives. The information processing approach focuses on the types of information used by consumers, how this information is processed (evaluated), and

consequently how decisions are made. It is a fundamental theory which provides the sound basis for a consumer model.

While Bettman introduces the theory in its conceptual entirety, I find it more useful to view it in a sequence of three layers

The first layer I see as a basic hierarchy of consumer decision making processes. Bettman emphasizes that no distinct starting or ending point exists for the decision process, hence the notion of a hierarchy is less absolute and more a conceptual convenience.

The second layer I see as a group consisting of three mediating and/or constraining processes serving to articulate the basic decision making process introduced in the first layer.

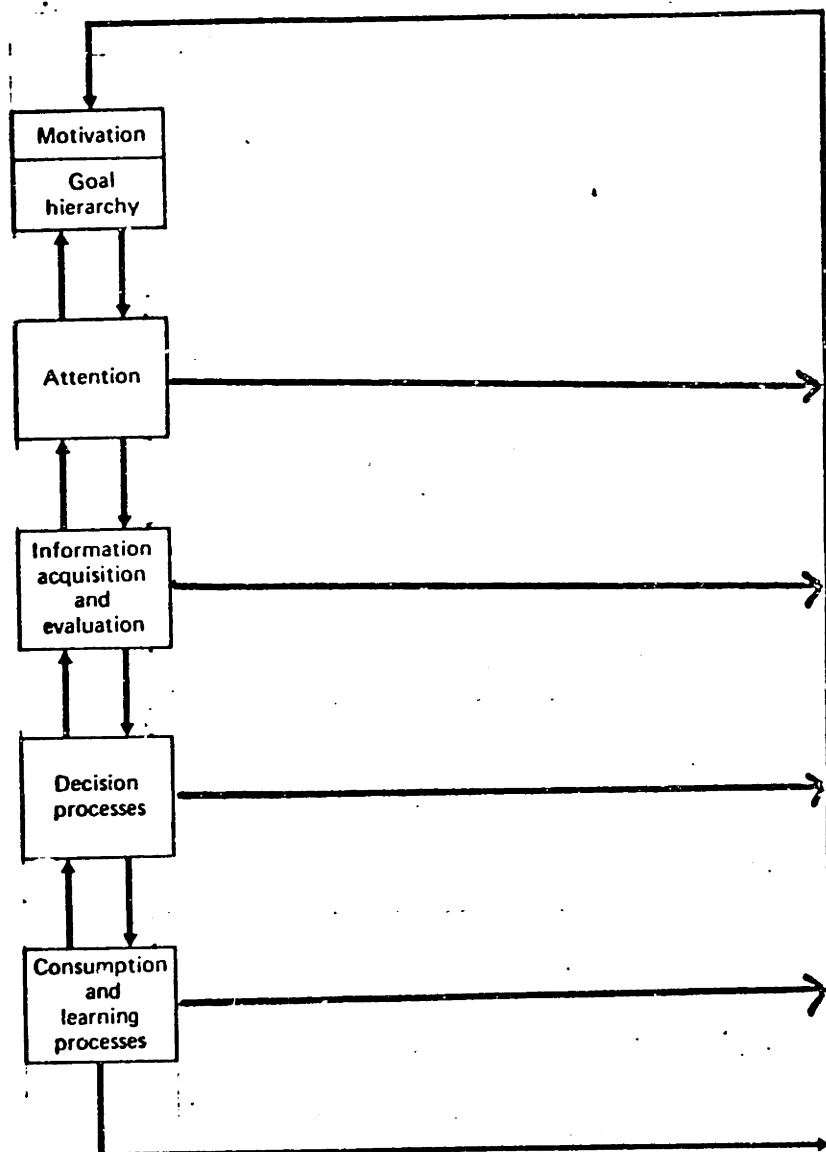
The third layer consists of processes which link the individual to his/ her environment and the associated distractions and informational updates that impinge on the consumer during the decision making process.

The First Layer

Shown in figure 4.1 are the elements of the first layer: Whereby: Motivation, Goal Hierarchy.

In this scenario motivation is seen to be a set of mechanisms serving to control and/or mediate the movement of an individual from some initial state toward some desired state. In this way motivation is seen to affect both the direction and intensity of behavior, both defining desires and determining the amount of energy expected to fulfill them.

A goal is said to be a specific state which, when attained, is instrumental in attaining the desired end state (goal object). Because goals can be broken down into more discrete units, the concept of

Figure 4.1, The First Layer:

subgoal is employed and the ordering of such subgoals, goals and desired states is deemed a goal hierarchy. Such a hierarchy as applied to a specific product class may very well take the form of a partitioning structure as shown in the Hendry system and others.

Attention.

Voluntary and involuntary attention are distinguished here.

Voluntary attention is said to represent the consumers allocation of information processing effort and is guided by the goal hierarchy. Involuntary attention is used conceptually to refer to interrupting events which will be treated specifically later.

Information Acquisition and Evaluation.

The information processing approach suggests that the goals being pursued will clearly influence the area of attention and thus the information acquired. The information is then evaluated as to its sufficiency for proper (sub)goal attainment.

Decision Processes.

A critical aspect of the theory is that choices occur in all of the previous components: choices about goals, what information to attend to and when to stop searching. The ubiquitous presence of choice implies a cycling rather than a serial process. The decision process as depicted as depicted has its focus on the comparison of alternatives. Here choice heuristics are the major vehicles for these comparisons. Bettman further suggests that detailed rules for comparison (heuristics) can be viewed as simply one level of the goal hierarchy and that subgoals can be interpreted as evaluation (choice) criteria. In this way, for example, a satisfaction level for a particular product attribute would be both a subgoal and evaluation criteria. Bettman admits that this suggests that no separate decision stage process exists. He has, nonetheless, treated it as a separate component of the theory because of the salient nature of specific choice rules in understanding choice behavior. The nature of which will be explored more thoroughly in the next chapter.

Consumption and Learning:

Once a purchase has been made and while the product is consumed or experienced a new source of information is opened to the consumer, and the outcome of future choice is affected. This depends on how the outcome is interpreted. This is dependent upon differing inferences of causation (attribution). Once such a process has occurred it is suggested that a consumer may update his/her decision rule or do nothing. Two common decision rule changes are: simplification and elaboration.

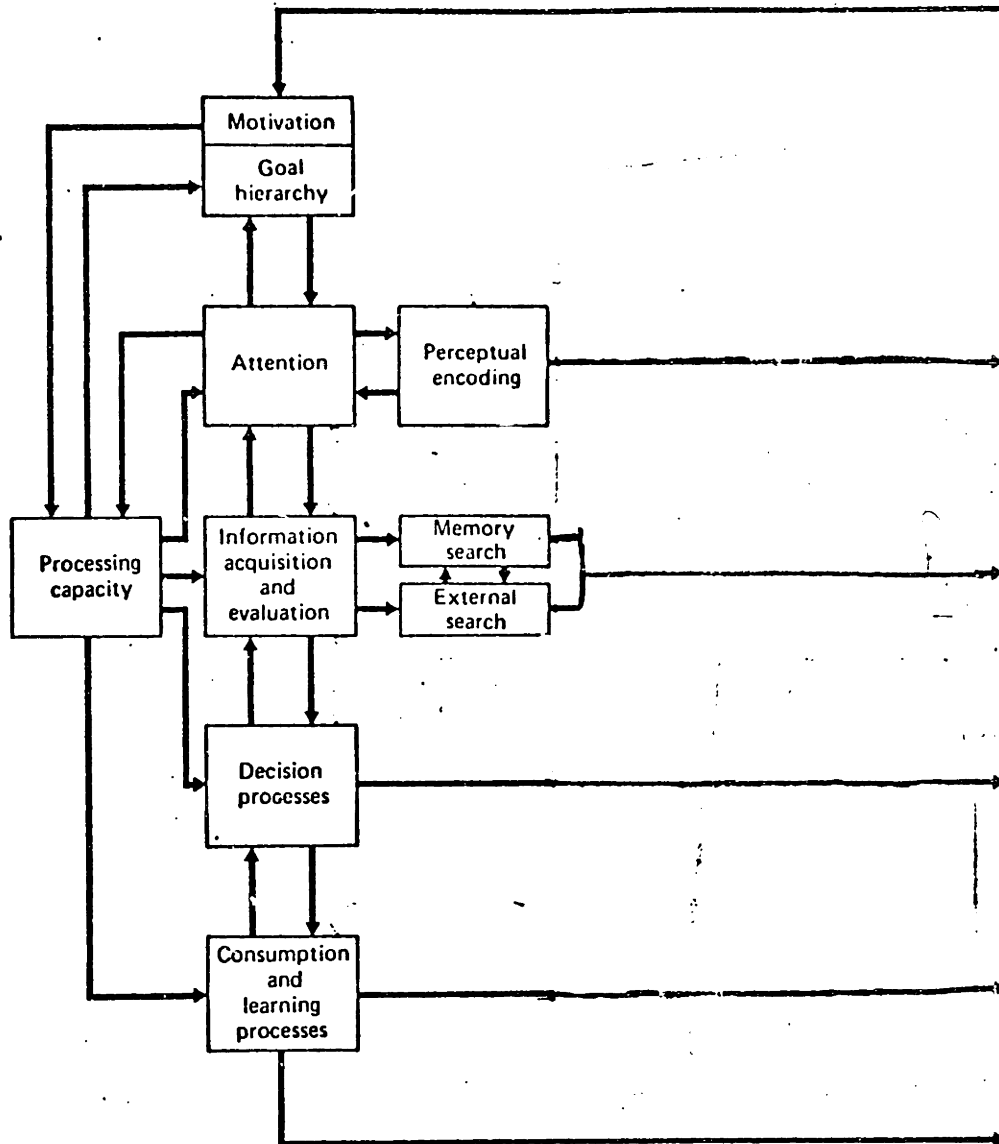
THE SECOND LAYER:

Associate to the so described hierarchy are three mediating/constraining processes. The first two being perceptual encoding and processing capacity. The third mediating process involves an elaboration of the information acquisition process by differentiating between memory and external search procedures. Their association with the hierarchy is shown in figure 4.2.

Whereby:

Perceptual Encoding: This refers to the interpretation process an individual undergoes after having attended to a stimulus. Bettman endorses the belief that construction of such interpretations typically comes from both memory (the way things were) and the perceptual input itself (the way things are) where interpretations most closely aligned with pre-conceived concepts are most quickly built and assimilated into the goal hierarchy. In this way attention and perceptual encoding constantly interact and the notion of closed or open mindedness illustrated.

Processing Capacity:

Figure 4.2, The Second Layer:

The present theory elaborates on this by considering such limitations as a capacity problem with capacity being positively linked with effort, hence motivation. This notion of of processing capacity is further linked with a consequential limitation of the kinds of strategies, heuristics, or rules that are feasibly used in a choice situation. Since this theory suggests that choice occurs throughout the

process, the concepts of effort and processing capacity impacts all the basic stages outlined in level one. The major propositions from this analysis are said to be:

- That capacity exists and must be allocated, whether by a conscious decision or nearly automatically by learned rules and
- That choice tasks are often so complex that simplifying heuristics are used.

Memory and External search: Acquisition of information is here seen to be facilitated either through memory or external search. In a choice situation search may initially be internal with memory being examined. Depending on the degree of association a memory has with a stimulus being attended to, this process may become automatic. Memory may not contain sufficient information so external search may be implemented. External search procedures are thought to involve changing the immediate goal hierarchy and redirecting attention and perceptual encoding. Through this process memory is said to mediate by providing interpretations of the external information found.

Hence information acquisition and evaluation is a revolving process which is continued until criteria for determining when information search should be stopped are met. Such criteria are proposed by the theory to depend on:

For internal search,

- the amount of (relevant) information stored in memory
- the degree of suitability of that information
- the degree of the perceived conflict in the choice situation

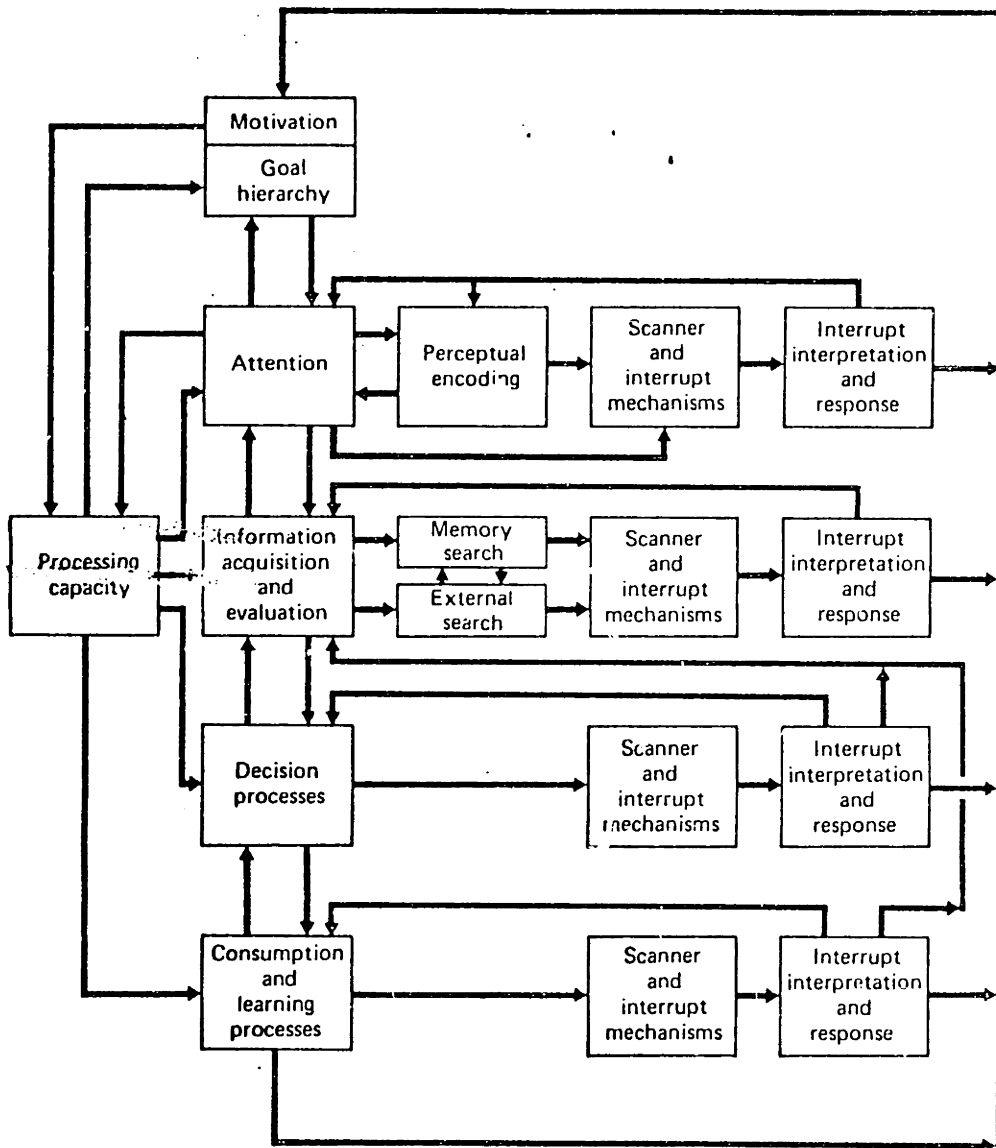
For external search,

- the costs vs the benefits of the information
- choice environment factors such as,
 - * availability of information
 - * difficulty of the choice task
 - * time pressure on the decision process

The Third Layer: Imbedded in this conceptual layer is the key concept that consumers are interruptable and not totally single minded in their pursuit of goals. Adapting work from Simon (1967) Bettman attaches scanner and interrupt mechanisms to his theory so as to underscore such a possibility at all levels of choice. Figure 4.3 depicts this relationship.

In this model the scanner is postulated to be a mechanism for monitoring the environment for the purposes of noticing conditions which require changes in current actions or beliefs. When a theoretical scanner threshold is reached then an interrupt mechanism is said to be triggered and new responses to the conditions encountered. Briefly, the scanner and interrupt mechanisms influence the stages in the following ways.

Attention and Perceptual Encoding: Attention and perceptual

Figure 4.3, The Third Layer:

encoding are not totally governed by the proposed goal hierarchy. People often attend to stimuli or events not directly related to current goals. The scanning and interrupt mechanisms are proposed to deal with this situation by means of two types of interrupting events: conflicts and learning about the environment. Conflict can arise either from parts of the environment which are competing for one's attention (ie.

advertising medium) or from a difference between what is expected vs what is actually experienced. The individual management of conflict in this theory is adopted from various theories (Hansen 1972, Howard and Sheth 1969) and suggests that an optimum level of conflict exists whereby if conflict is either below or above this theoretic level, actions or rationalizations are enacted to either increase or decrease the level respectively. Furthermore, conflicting occurrences can be broken down into mechanistic responses, such as reacting to a loud noise or commercial, or reflective response, such as reacting to a price change. For the consumer, this could mean that he/she might become bored with a product which had previously been seen as satisfactory, and another alternative or product type is experimented with; that is, conflicting information is sought.

The second type of interrupt event, environmental learning, involves the acquiring of information not directly related to current purchases. Said to occur in two ways, through reactions to interrupts and through relatively passive processes (perusing), this form of learning often serves as background information to anticipated decision situations. The level of anticipation quite naturally varies, and can be linked with levels of conscious allocation of attention.

Information Acquisition and Evaluation: The role of scanner and interrupt mechanisms in this stage stems from three major interrupt causes: conflicting information, lack of information, or unexpected remembering of information. Conflicting information can occur in many ways, a few are: conflicts between two external sources, conflicts between an external source and memory, or conflicts between expectations

and the external source. Management of this type of conflict is thought to involve such tactics as discounting one source or another or going on to seek clarifying information. For the consumer this could represent a situation where counter claims are being made for competing goods or claims are made which does not jive with ones experience with or perception of a product.

Lack of information is delt with in two main fashions: either the information is deemed unimportant, or more information is sought

Occasionally individuals encounter a stimulus which elicits a previously 'forgotten' memory. Such is said to remind one of a goal and lead to a revision of the goal hierarchy.

Decision Processes. As conflicts in decision criteria emerges, the possibility of interrupt occurs. Resolution is said to occur by trading off one criteria for another (prioritize) or by seeking more information as a basis for a higher level heuristic, or by postponing or not implementing choice.

Managerial Usefulness The usefulness of this theory to the marketing manager rests predominantly with providing better insight into the kind of information sought by the consumer, how the consumer goes about acquiring this information, and how the information is then processed. Knowledge along these lines is key to designing and presenting messages. Optimal message frequency and sequence of types is more likely to be achieved with an understanding of the approach outlined here.

An especially useful contribution of this theory is the detailed outline of the goal hierarchy concept. This concept is quite useful in

not only understanding the motivations of individuals but also in providing a link to market partitioning work as outlined in the Hendry system. The partitioning hierarchy generated by the Hendry approach can be likened to Bettman's goal hierarchy where each brand represents a subgoal level. The Bettman model sheds much light on how such a hierarchy is developed and interpreted by consumers. Understanding of the theory will lead managers to ask better questions and make more insightful observations when segmenting markets.

Another use of the model is in the area of conflict and response to conflict. The theory details these processes and may well offer superior techniques for measuring conflict levels in consumers. Accurate measurement can lead to more optimal timing of a new brand, attribute, or campaign introduction when conflict levels drop below ideal. Such indications could well precede noticeable drops in sales.

A third specific use of the theory can be seen in terms of its central treatment of choice heuristics or decision rules. Through such an analysis, the specific method by which choice processes are implemented are detailed. Understanding the consumers' strategy for sorting out alternatives and weighing attributes is central to product design and positioning.

A fourth specific contribution of the theory is its broad description of purchase decisions, decisions not only among competing alternatives of a product class (decision rules) but between product classes also (application of this whole theory).

The obvious drawback to the theory rests with the fact that it has not yet been applied on a useful scale. Proper measurement techniques

and experimental procedures must be developed and tested to make the information processing approach operational for diagnosing a consumer situation. No doubt such work will be forthcoming, so it remains important that the manager be aware of the theory so as to make specific use of it when it becomes practical. In the meantime knowledge of the theory will help managers form a more detailed mental model of consumer behavior which will help them make better observations and decisions.

I now move on to a treatment of the Howard/Sleth model which, while differing in perspective from the Bettman theory, should be viewed as complimentary.

The Howard / Sheth Model:

The Howard/Sheth model (1969) was one of the first large system models and has throughout its development undergone rigorous examination and rethinking. It was developed under a commission from the Ford Foundation and represents an admirable attempt to identify and frame the major variables seen to influence consumer behavior. It takes its terminology from both economics and the behavioral sciences and therefore can become somewhat confusing for the garden variety manager. Its value as a unifying work, however, makes it worthwhile to peruse through at least once.

An underlying observation of the model is that much of purchase behavior is repetitive with consumers establishing purchase cycles for various products or product categories. The focus of the theory is consequently on how decision process elements change or evolve with repetition of purchase. Specific attention is paid to search for and incorporation of pertinent information from the commercial and social

environment.

The theory outlines three elements of brand-choice decision making: 1) a set of motives specific to a product class, 2) a set of alternatives (brands), and 3) decision mediators serving to match motives with alternatives. An important operational aspect of the theory is the use of product class analysis. The notion of product class is readily understandable by managers, yet it is important how consumers define the product classes not managers or industry (unless they happen to coincide).

Another important construct of the theory is the notion of decision mediators. These represent a set of rules serving to order and structure both a consumer's motives (a less refined version of Bettman's goal hierarchy) and a set of brand alternatives depending on their probability or potential to satisfy said motives. These mediators are developed through learning either from the environment or from direct product involvement (experience).

Here the concept that the nature of consumer decision making varies predictably with a buyer's experience with a product class is outlined. Consumers who are just beginning to purchase a product class are said to actively seek (or accidentally receive) information from his/her commercial and social environments. Intervening at this point are individual perceptual processes serving to both limit the intake of information (a less refined version of Bettman's criteria for terminating information search) and frame or reference this information to one's belief structure. The acknowledgement of this intervention represents a significant divergence from the traditional

stimulus-response scenario. The consumer is said to be involved with the product class and to learn from the experience. Appropriate and sufficient decision mediators are developed and the consumer chooses a brand. If the brand proves satisfactory, the decision mediators are reinforced, leading to the probabilistic increase of brand repurchase. As satisfactory purchases are repeated, the consumer is said to manifest a routine decision process. Such is outlined by Howard and Sheth as the basis for strong brand loyalty.

This sequence through which consumers experience a product and collect information about it is seen to reduce the complexity of the buying situation, thus leading to a reduction of active search behavior. Consumers are envisioned as moving to a state of "cognitive consistency" (ie. dissonance reduction) whereby further information is filtered or distorted so as to remain consistent with his existing cognitive structure (beliefs).

Rescuing the consumer from such a behavioral black hole of self-fulfillment is the phenomena of boredom. In such a scenario even the preferred brand may become unacceptable and a desire to complicate the buying situation arises. It is here that the aforementioned concept of an "optimal conflict level" was forwarded -- initiating a cycle of information seeking that oscillates from complication to simplification and back again.

Individual Differences: While Howard/Sheth acknowledge the need for a theory on human behavior to account for individual differences, it is asserted that the construction of a model necessarily starts with a host of simplifying assumptions (presuming some homogeneity) so that the

invariant relations can be identified. Subsequent relaxation of these assumptions allows for the broadening of the theory. Such simplifying assumptions are seen as key not only to the model builder, but to the manager as well who is interested in differentiating buyers on an aggregate level. Thorough psychological understanding of the individual is seen as basic for achieving useful classifications. The differentiating of consumers on the basis of extensiveness of problem solving is seen as such a useful classification.

Specific Elements of the Theory:

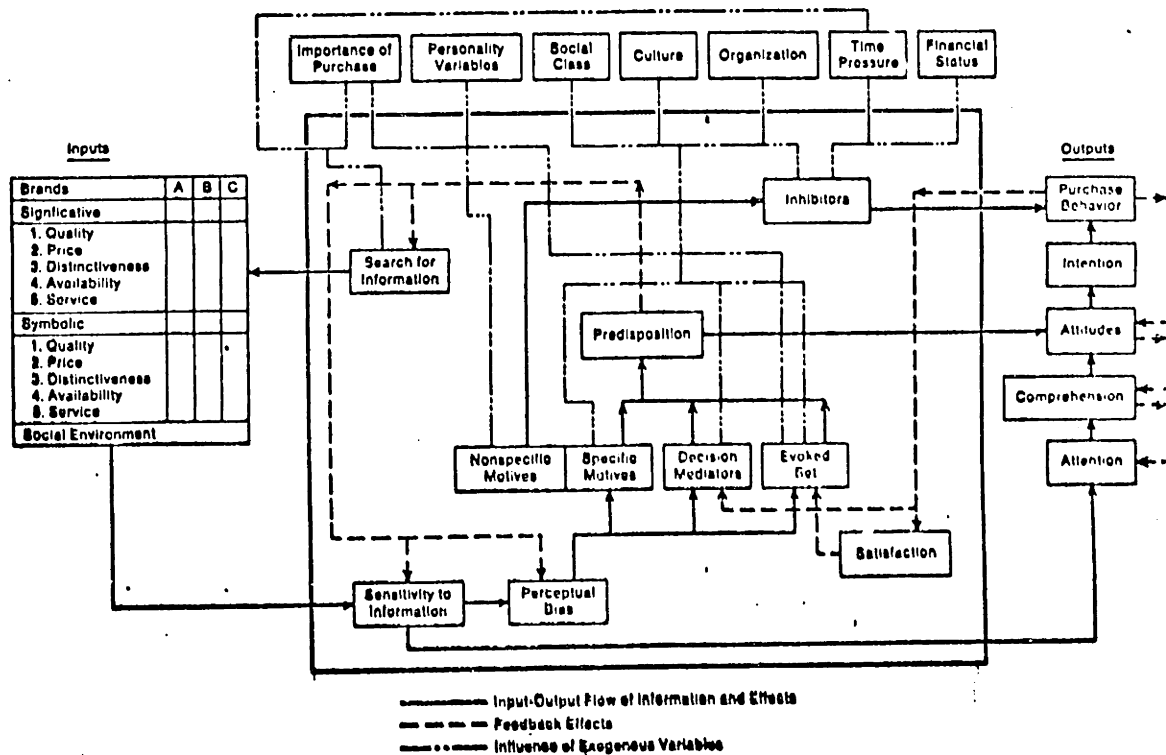
The model focusses on the process of rational choice behavior and builds from four elements consisting of three sets of variable categories and a set of mediating constructs. The variable categories are: 1) input, 2) output, and 3) exogenous. The constructs are deemed hypothetical and are broken into two categories: 1) learning and 2) perceptual.

A diagram of the Howard/Sheth theory is provided in figure 4.4. The central rectangle contains those hypothetical constructs and variables depicting the state of the buyer. The inputs are stimuli from the commercial (marketing) and social environment. The outputs take the form of a hierarchy of responses a consumer is said to undergo in a purchase situation. The seven exogenous or influencing variables are shown at the diagrams top and account or adjust for interpersonal differences within a heterogeneous population. Following is a brief description of each element of the theory.

Stimulus Input Variables:

Inputs from the commercial environment are basically generated from

Figure 4.4, The Howard/Sheth Theory: (from Kassarian & Robertson, 1973, p. 523)



elements of the marketing mix. In the theory these elements are portrayed from the consumer's perspective and five major brand dimensions are outlined: price, quality, distinctness, availability and service. These dimensions are further broken down by the manner in which they are presented or conveyed. If brand information is gotten from the product itself, the input is deemed significant. If brand information is received indirectly from verbal or visual representations (media, catalogues, salesmen), the input is deemed symbolic. Effective marketing is seen in the theory as an optimization problem of funds allocated between these channels of communication.

Inputs from the social environment, while not particularly

controlable, also influence decision making. Word-of-mouth and the observation of a product in use are two examples.

Hypothetical Constructs:

These constructs are deemed hypothetical simply because they are directly unobservable. They are endogenous to the system yet their values are inferred from the relationships between the output variables in lieu of the input and exogenous variables.

Learning Constructs

Motives: Or goals are treated as a means-end chain or hierarchy and are categorized as general or specific depending on their position in the chain. General or non-specific motives are thought of as those drives which affect the consumers motivational state in a global fashion, and they are considered higher in the means-end chain. The Maslow hierarchy is a good example of what Howard and Sheth mean here.

Specific motives are, for the most part, manifestations of an overseeing general motive. Specific motives are said to be lower in the means-end chain and are closely aligned to the attributes of the product class. Such that, product attributes are said to fulfill specific motives which in turn or in combination fulfill general motives.

Brand Potential of the Evoked Set. Consumers familiar with a product class has in mind a set of alternatives (evoked set). Alternative evoked brands will be viewed by the buyer to satisfy his motive structure in different ways. Each brand is therefore said to possess a potential for need fulfillment. Through experience the various brands are assessed along these lines and ranked.

Decision Mediators: Such mediators are established through learning and are said to take the form of 'enduring cognitive rules' which provide a means for evaluating brands in a manner compatible with goal directed behavior.

Predisposition. Considered in this theory to be a summary of motives, brand potential rating, and decision mediation... predisposition refers to preference as it applies to the evoked set. This construct is determined to be an 'aggregate index' of attitude and is measurable.

Inhibitors. These represent those environmental forces which may disrupt the motivated, predisposed consumer from purchasing. Four inhibitor types are proposed: high brand price, brand availability, time pressure on buyer, and the resources of the buyer. The theory suggests that while such inhibitors are not generally internalized by the consumer, systematic occurrence of an inhibitor will cause adaptation of an individual's decision mediators.

Satisfaction: This refers to the degree to which actual purchase consequences match expectations.

Satisfaction or dissatisfaction will affect the ranking of the evoked brands for the next buying decision. Extreme outcomes are seen as likely to affect the number of brands in the evoked set... whereby a very positive experience could result in the subsequent sole consideration of a brand, and whereby a very negative experience could lead to the brand's omission. Reasonably discrepancies in expected satisfaction are seen as likely to affect brand ranking.

Perceptual Constructs

Sensitivity to Information. Said to depend on the degree of stimulus ambiguity (understanding) and predisposition, sensitivity to information refers to an individual's control over the intake of information. Selective attention is a manifestation of this phenomena.

Perceptual Bias. This is a process whereby people may actually distort information as they perceive it. The fact that people sometimes see what they want to see is a manifestation of this phenomena. The components of perceptual bias are complicated, drawing directly on predisposition which itself draws on other constructs. The level of perceptual bias can be linked to an individual's receptivity.

Search for Information. During the buying process consumers actively seek information. Consumers are also said to acquire information passively. Howard & Sheth go on to suggest that consumers passively acquiring information are likely to exhibit lower levels of perceptual bias... thus raising the probability they will be receptive to commercial communication.

A customer will seek or accept information generally in proportion to their experience with the product class... or in the event of boredom.

Response Variables

Attention. In the Howard/Sheth framework attention is viewed to be "buyer response" which reflects the quantity of information being used and is controlled by the sensitivity

Comprehension. In this theory comprehension simply refers to the knowledge a buyer possesses about a brand. Standard advertising measures such as awareness, aided or unaided recall, and recognition are said to

capture various aspects of comprehension. to information construct.

Attitude Towards Brand. This is the visible or measurable mapping of an individual's predisposition -- and simply represents a consumer's evaluation of a brand's potential to satisfy.

Intention to Buy. This variable, drawing from one's predisposition, is an individual's prediction about what brand will be purchased. It is said to include a subjective forecast of likely inhibitors and is used extensively as a prediction of brand purchase.

Purchase Behavior. Purchase behavior is the overt event following favorable predispositional, intentional, and inhibitor stages. It is what impacts the firm's sales figure and is, therefore, most visible. The consequences of this stage must also be considered for they most certainly affect future purchases. Howard & Sheth argue that it is often useful to include consumption as part of purchase behavior.

Exogenous Variables

The Howard/Sheth theory is primarily considered with those influences which affect the consumer during the time period of a particular decision-making process. The exogenous variables as outlined are presumed to be predominantly historic in nature and their influence already imbedded in the values of the perceptual and learning constructs. Therefore, the theory does not explicitly attempt to explain the formation of these variables or outline how they change. They are, however, considered to be useful as a basis for market segmentation due to their causal link to behavior. For this reason they are included, and I provide a brief outline.

Importance of Purchase. Refers in one way to the degree of

involvement an individual has with the product class in question. The more important the purchase, the more involved a consumer will become, the more information will be sought, and the larger the evoked set will become.

Time Pressure. Refers to the allocation of limited time resource to competing behavioral alternatives... one of which is the purchase behavior in question. Mounting pressure or lack of time can: 1) speed up the purchase by cutting down search for behavior or 2) inhibit and thus deter or delay the purchase behavior. It is an effective marketing campaign which can both enhance this pressure and minimize the probability of purchase delay.

Financial Status. Refers to budget constraints and their effects on mediating unconstrained motives or ideals into reasonable alternatives.

Personality Traits. Consisting of a whole host of goodies these variables are noted to affect both the general motives and evoked set of a consumer... general motives because of the fundamental nature of such traits like anxiety and self-confidence and evoked set because certain products have symbolic connotations (ie. status) .

Social and Organizational Setting. Is said to involve group or social influences from the family, peer groups, etc. -- and organizational influences from small group interactions dealing with concepts of power, status, and authority. These variables are deemed specially important due to their influence on the learning constructs.

Social Class. Is said to capture higher level influences of social stratification.

The Dynamics of the Model

In order to facilitate their investigation, Howard & Sheth present a classification system for decision processes. They purport that depending on ones predisposition towards a brand, the associate decision process can be viewed as one of three types:

- Extensive Problem Solving (EPS) Here brand predisposition is low insofar as the potential of each evoked brand to fulfill present motives remains ambiguous. Preference is not exhibited and the buyer actively seeks information. Deliberation of alternatives is prevalent as one develops a firmer understanding of what defines the product class in question.
- Limited Problem Solving (LPS) Here brand predisposition is said to be moderate. Ambiguity still exists since no brand is immediately preferred (or recognized). Information seeking occurs, but to a lesser extent than with EPS. Brands are compared more on a relative basis, with the evoked set containing a smaller number and with preference for each being fairly equal.
- Routine Response Behavior (RRB) Here brand ambiguity is eliminated insofar as the consumer has sufficient information to make an immediate decision. He/she has developed a high level of predisposition towards one or two evoked brands. Purchase behavior under these circumstances can occur 'spontaneously' in response to congruent information about the brand. Here impulse purchase behavior is seen for the most part as a coincidental result of both a strong predisposition and a facilitating commercial or social stimulus (ie. a display, or seeing the product in use).

These categories represent different degrees of consumer learning. Three causes for development and change in the learning constructs are proposed; they are: 1) generalizations from similar buying situations, 2) repeat buying within the same product class, and 3) Information.

Specific treatment of the usefulness of these categories will be

undertaken in the following section concerning John Howard's subsequent extension of the Howard/Sheth theory. Howard & Sheth outline and specifically treat

Managerial Usefulness. The usefulness of this theory to the marketing manager is that it provides a reasonably worldly unification of previously unrelated findings. It provides a broader interpretation than does the Bettman theory as it includes a specific array of endogenous variables.

In so doing, it has provided us with a valuable way to view product classes in terms of consumer experience and involvement with them. Specifically, the constructs of RRB, LPS, and EPS can be linked not only to the experience a consumer has with a good but also with the nature of the good itself. For instance consumers need less information to decide on a produce whose purchase consequences are not that great (i.e. consumer packaged goods), and are therefore likely to achieve RRB faster. For purchase of a durable, where the consequences are significant, the consumer will maintain a higher involvement level and will probably exhibit LPS or EPS. Therefore a good can be classified in terms of the type of purchase behavior it is likely to evoke from a population with a given level of experience with it.

The major drawback of the theory is that while it integrates a number of phenomena, it does not adequately explain when these phenomena are important and how they operate. For internal processes, the Bettman theory helps. For external variables the relationships are still unclear. Furthermore, the theory focuses heavily on the consumer choice process and not on the firm-consumer interaction. In addition, the

theory is not sufficiently general to explain consumer choice between product classes as with the Bettman theory.

Extensive efforts have been made to test the Howard/Sheth theory empirically (Farley and Ring, 1970). The results have validated the majority of the proposed relationships. Much work still needs to be done to make the model more normative.

HOWARD'S EXTENTION

In his book Consumer Behavior: Application of Theory, Howard (1977) clarifies and applies many of the concepts forwarded in the Howard/Sheth model. In this work no further attempt to develop a large system model is made. Rather a host of well-defined concepts have been chosen for analysis. These concepts are linked by four underlying themes, which are:

- That three kinds of problems exist for which the study of consumer behavior is useful: management, regulation, and actual purchasing.
- That consumer behavior must be viewed in three separate settings: preindustrial, industrial, and postindustrial.
- That three views of consumer behavior must be reconciled. They are: economic, marketing, and psychological.
- That there exists three stages in the development of the consumer decision making process: (as before) Extensive Problem Solving (EPS), Limited Problem Solving (LPS), and Routine Response Behavior (RRB).

While the role of the first three themes is important in putting the theory to use, the scope of this thesis does not permit their treatment. Consequently, I will focus on the contributions Howard makes along the already familiar lines of the fourth theme (from the

Howard/Sheth treatment).

The notion that consumers progress through various decision making stages as a consequence of learning is key to Howard's understanding. These stages so labeled EPS, LPS, and RRB, while not necessarily discrete are essentially differentiatable and serve as a good framework.

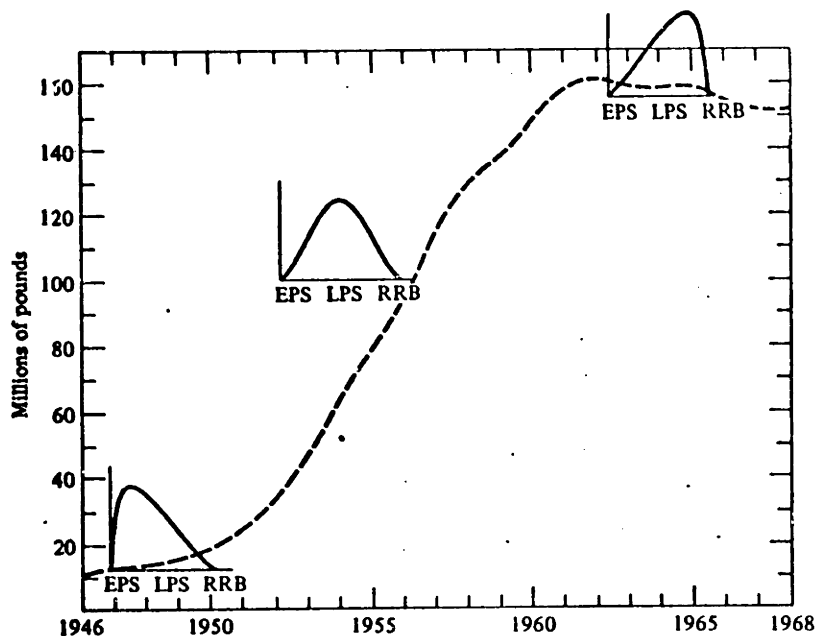
In his amplification of these stages, Howard introduces the notion of concept learning. He suggests that in the context of a postindustrial society, where the introduction of radically new products is a common event, such a notion is useful in broadening the normative power of the EPS, LPS, RRB framework. Concept learning is seen to occur in three phases:

- Concept Formation. Here in order to purchase a brand class in an effective fashion, consumers are said to first develop a concept or image of this brand. Appropriate choice criteria are learned essentially through a grouping and distinguishing process. Thus by grouping a new product with something perceived as similar, familiarity is attained. This concept formation process is a counterpart to EPS.
- Concept Attainment. When other new brands appear within the same product class, consumers learn other choice criteria with which to differentiate and evaluate the new brand in relation to the others in its class. In this case the consumer merely needs to attain a brand image (vs brand class). This concept attainment is a counterpart to LPS.
- Concept Utilization. After a brand class has been established, the decision making becomes simple. All brand quality judgements have been made ; the consumer has already formed a brand concept for each alternative. Deciding under this format is merely a matter of evaluating price and availability or other such routine criteria. This process of concept utilization is a counterpart to RRB.

Integrating this framework with the notion of a product life cycle, Howard has observed that each stage of the cycle can

be characterized by the decision stage most consumers are in. This does not imply that it takes the duration of a product's life for consumers to exhibit RRB... moreover, such depends on how frequently the consumer buys the product. When the whole distribution of consumers is observed, the relative proportion of people exhibiting one decision stage or another can be seen, and it is the mean of this distribution which is linked to the product life cycle stages. Embodied in the subsequent skewing of the distribution is the concept of diffusion of innovation. These ideas are illustrated in figure 4.5 which shows the distributions typical for three stages of the instant coffee life cycle curve.

Figure 4.5, Product life cycle and stages of the decision process for instant coffee: (from Howard, 1977, p. 13)



The parallel use of the ideas of product life cycle, decision stages, and concept learning provides an insightful integration of a variety of perspectives. Howard proceeds from this point to convey the applied aspects of this theory and to demonstrate that what has been

outlined as three stages is really the complex stage of RRB getting simpler (LPS) and simpler (RRB).

In the second (and last) section of his book, Howard outlined some methods for modeling the various decision stages. I find it useful to present them.

Modeling RRB

Stochastic Processes. Howard suggests that the predictive powers of stochastic models is useful in projecting the purchase frequency exhibited by RRB. The fact that stochastic models generally do not represent the underlying process is finessed in lieu of good results.

The first-order Markov model is demonstrated to be useful in mapping the general direction market share will take. The model is further seen as beneficial in interpreting a mass of data that would otherwise be overwhelming. Howard goes on to suggest that influences of competitive interaction -- such as price, promotion, or advertising adjustments -- can be treated as supplemental information to the model. The accuracy of the projections can therefore be increased by tuning the transition probabilities. Such a procedure can be inexpensive and provides managers a good incentive to interact with the model.

The Hendry model is also outlined as useful in predicting RRB in a steady state market situation where the consumer is fully learned, and brands are similar. The Hendry system is viewed as a good but not necessarily the best technique to partition the market. Howard suggests that managers use more than one way and compare the results... if similar results are yielded, it can safely be said that the 'true' structure has been identified.

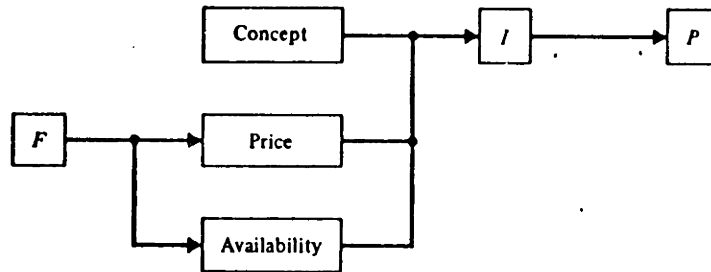
Deterministic Models of RRB. While it has been demonstrated that stochastic models have good predictive characteristics, they do not provide an explanation of behavior in managerially useful terms. That is, they do not provide any diagnostic help... help which comes in the form of explicitly relating purchase to actionable marketing variables. For this a theory is needed, and such theories, says Howard, are necessarily deterministic. These deterministic models are said to take two forms: estimation models and structural models. Estimation models are used merely to relate phenomena with no implicit concern for causation. Regression analysis is an example of such a model. Structural models, on the other hand, are concerned with causation. Here the specification of causal paths between variables sets up a network that identifies the influencing parameters.

Howard presents a structural model of RRB, shown in figure 4.6. In this model the consumer is said to come in contact with facts about a brand which affects his/her impersonal attitude towards the brand's price and availability. This impersonal attitude is combined with the consumer's personal attitude or liking of the brand embodied in his/her concept of the brand. This combination of attitudes results in an intention to buy which leads to purchase.

Modeling LPS

While RRB was found to be adequately represented by both stochastic and deterministic frameworks. Howard believes that modeling LPS requires a deterministic approach where stochastic elements may be included. This assertion follows from the notion that in LPS there are "more points of leverage for changing behavior; particularly, the brand

Figure 4.6, Model of RRB: (from Howard, 1977, p253)



concept itself may be changed".

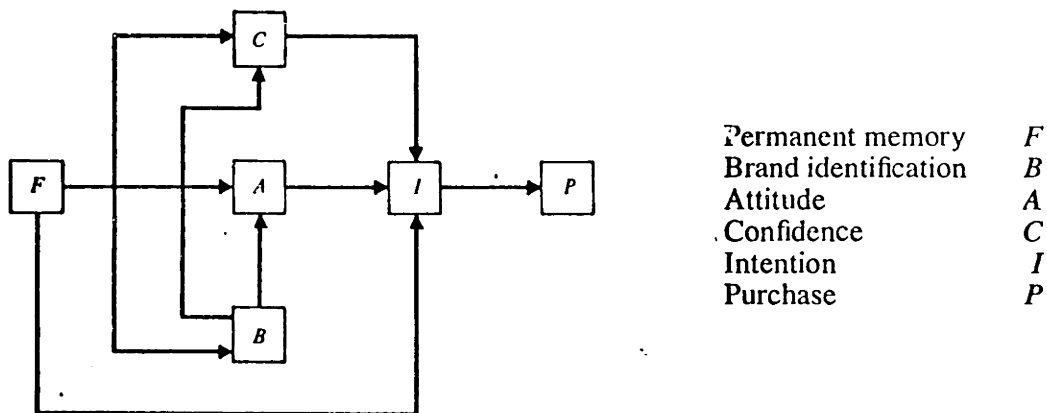
In developing a structural model for LPS, Howard relies on a general approach for modeling. For clarity I outline a reworked version consisting of seven steps; they are: specifying the model, operationalizing the specified model, collecting the data, conversion of the model to estimating form, analysis of data, describing the results, and interpreting the results. It is this approach or methodology which forms the backbone for Howard's development of deterministic, structural models of buying behavior. He introduces it in the context of modeling LPS but it also applies to modeling EPS and more complex applications of RRB.

This model building approach is thoroughly outlined by Howard with illustrations of specific market situations and generates treatments allowing for a variety of model forms, but for the purposes of this work it is not important to present all these illustrations. Rather it is the general approach I wish to convey. Following this purpose I will provide a brief description of the various model building stages using a simplified example employed by Howard as I proceed.

Specification of the model. The goal here is to describe the theory as precisely as possible. Boxes and arrows are particularly

attractive devices for this step, the result being a flowchart. Figure 4.7 shows such a result based on data for instant breakfast food. For simplicity, the construct name have been replaced with symbols.

Figure 4.7, Flow chart for instant breakfast food:(from Howard, 1977, p. 257)



Operationalizing of the Specified Model. The object is to devise a questionnaire for collecting data from consumers in order to quantify previously specified constructs such as memory, identification, attitude, confidence, intention, etc..

Collection of data. Associate to this process, questions concerning sample size, representativeness, and manner of implementation (ie. mail, telephone, personal) should be considered.

Conversion of model to estimated form. To fit the model to the data, the symbolic relations of the model must be recast into a set or system of mathematical equations. Equations representing the instant breakfast example are:

$$B = a_1 + b_1F$$

$$A = a_2 + b_2F + b_3B$$

$$C = a_3 + b_4F + b_5B$$

$$I = a_4 + b_6F + b_7A + b_8C$$

$$P = a_5 + b_9I$$

In this case the simplifying presumption of linearity is made.

Analysis of the data. At this stage the data collected from the questionnaire is adapted to the mathematical system. Econometric techniques are employed to solve the simultaneous mathematical system and hence estimate the parameters.

Description and Interpretation of results. Here the results are presented (described) in an understandable fashion, and conclusions drawn through interpretation. Table 4.1 shows the results for the instant breakfast data. For each equation, the variable associated with a -1 entry is the dependent variable with the others in the row being independent.

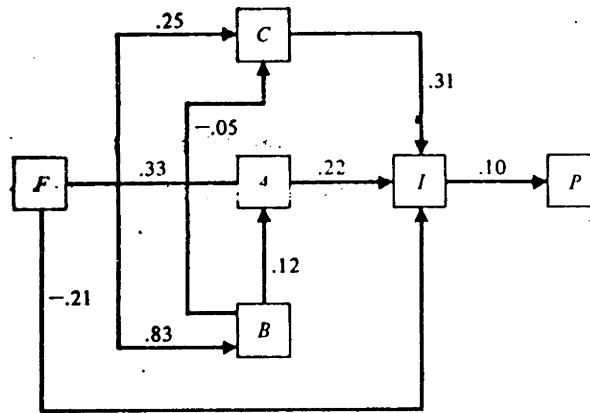
Table 4.1: (from Howard, 1977, p261)

Coefficients of the Instant Breakfast Model								
Equation	F	B	A	C	I	P	Constant	R ₂
1	.83	-1					3.3	0.10
2	.33	.12	-1				3.2	0.13
3	.25	-.05		-1			3.0	0.10
4	-.21		.22	.31	-1		0.8	0.25
5					.10	-1	-.15	0.04

Note: Some segmenting variables were included to properly identify the equations, but to simplify they are omitted here. Their coefficients, though usually significant, were small.

Figure 4.8 shows these relations in terms of the specified model. Here the coefficient for each independent variable is shown on the arrow going from that variable to the dependent variable it influences.

The interpretation of these results suggests that:

Figure 4.8, LPS model with coefficients: (p. 261)

...information has a strong effect on brand identification and a substantial effect on confidence and attitude: 0.83, 0.25, and 0.33, respectively. Specifically, we can say that if information was increased by 10 percent on this scale, brand identification would increase by 8.3 percent. Corresponding statements can be made about all other relationships.

A comparison of coefficients for brand identification, confidence, and attitude suggests that the message was designed to affect brand identification rather than confidence and attitude. On the other hand, it could be that none of the sources of information contained evaluative information; this would account for the low coefficient of F → A. The negative relation between information and intention is surprising; nevertheless, it is consistent with other analyses using the same specification. It probably captures effects otherwise omitted from the system. The negative effect of B on C is unusual, but the coefficient is small. A and C have similar effects on I. Finally, intention has a definite positive effect on purchase, but it is small.

After a deterministic model has been developed another series of questions arises. The first of these questions concern the generalizability of the procedures both across the population (societies & cultures) and across product classes for example. Howard

reports good results in performing such a LPS modeling procedure for a number of products in various countries, thus indicating validity.

A second series of questions asks if the model relationships are stable and therefore useful for prediction. Howard has undertaken a series of market simulations as a probe into this issue. His specific methods will not be treated here, but he reports encouraging results.

In a final comment on modeling approaches, Howard suggests that another significant approach is outlined by Little (1970), and that a convergence of his data oriented approach and Little's decision calculus (functionally explicit) approach is likely and perhaps necessary.

Modeling EPS

At the time of the books writing, Howard observed that progress towards modeling EPS was limited. An interesting discussion ensues of the various philosophic and methodologic issues evolving around this task, and the reader is referred to the source for exposure to this material and a list of references.

Moreover, I would like to suggest that the large system models presented in this chapter are not necessarily in competition (except in an academic sense). They have differing strengths and weaknesses as have been outlined. Along these lines I believe that insights into modeling EPS could well come from these models. Bettman, in particular, has done much work in the area of choice heuristics (decision rules); some of these rules are quite complex and hence could be useful in understanding EPS. The following chapter includes a treatment of such rules.

Managerial Usefulness. Howard's extension is useful in its

broadening of the Howard/Sheth notions of decision making. He elaborates on the learning process which is central to the theory. Such a framework provides a more normative insight into the frequency and sequence of message types required and for optimal product support than does the Bettman work. This analysis further serves to outline the types and amounts of information required by consumers at each decision stage. Specifically, the integration of the product life cycle and concept learning concepts serves to provide a means of tracking a market on the basis of the prevalent decision making behavior manifest by a population. Furthermore, deviations from a "typical scenario" can be useful in gauging product class definition shifts due to utilizing consumer perceptions or new product entry.

Another contribution of Howard's extension lies with his outlining of deterministic modeling methods and associated probes into the nature of the three decision stages.

THE NICOSIA MODEL

A prevalent criticism of the major large system consumer behavior models is that they focus on the individual as affected, but not explicitly interacting with other individuals. Insofar as consumer behavior is largely a social phenomena, this is a valid criticism.

The Nicosia model (1966) is the only major model which explicitly considers the selling firm and the consumer's interaction with it during the decision process. It is a computer based model which was spawned from advertising research in an attempt to unify various parts of the economic, psychological, and social mechanisms which govern observable behavior. Furthermore, the Nicosia model represents not only an

abstraction of firm/consumer interactions over time, but an attempt to simulate this behavior.

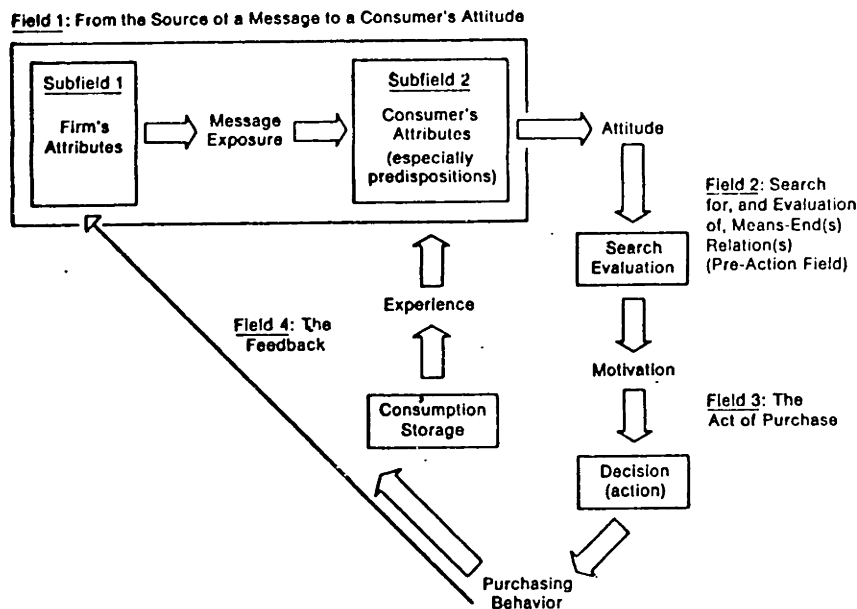
In order to cope with the complexity of consumer behavior, Nicosia has attempted to first map out the underlying structure or 'blueprint' of consumer behavior, and second, develop research tools and methodology necessary to support the theoretical work.

The Nicosia model builds from the concept of a closed system made up of a firm which develops and communicates messages to a type of consumer, be it an individual or a functionally homogeneous market segment, to is exposed to no other messages. In this context it is said that the firm and the consumer "determine each other" whereby neither is inherently independent of nor dependent on the other. In the course of a marketing situation for the firm, and a simultaneous buying situation for the consumer, the firm is viewed as influenced by consumer reaction whereby it adjusts its message. The consumer in this situation is likewise influenced by the firm and makes adjustments in his or her own reactions. A consumer reaction may or may not include purchase behavior depending on the nature of the firm's influence and situational factors. The model suggests that many interactions occur, many simultaneously, throughout the situation depicted by the model. These interactions are treated in the model as fundamental relations among economic, psychological, social, and other variables. These functional relationships, supported by the various research traditions, are key components of the model and are treated much like subroutines in a computer program. The specific use of functional relationships is said to depend heavily on the specific product and brand in question, and

ones theoretic perspective.

A flow chart of the Nicosia model is presented in figure 4.9.

Figure 4.9, The Nicosia Model: (from Nicosia, 1966,)



As can be seen, the dynamics of the model are manifest by four building blocks or fields. Starting with the firm, the activity within Field One encompasses the flow of information from its source (the firm) to its destination (the consumer) where it is internalized. Specifically, Subfield One includes the attributes of the firm's organization, its products, its resources, and its goals.

It is here that the context and timing of the message are formed. If the consumer is exposed to this message it becomes an input into

Subfield Two. This subfield represents the attributes of the consumer which are described in an information processing framework. The output of Subfield Two may or may not be the formation of an attitude towards a product or service. Here an attitude is seen as a cognitive structure of generic scope so that it includes feelings about the product class of the considered brand. This attitude is also felt to provide a weak attachment to the considered product. Field Two takes a product attitude and through search procedures (internal or external) evaluates it with respect to other attitudes about alternative products. Should the product be evaluated favorably, formation of a motivation towards the product in question will be Field two's output. Here a motivation is seen as a cognitive structure of specific scope whereby it includes feelings about just one brand. This motivation is then said to strongly drive the consumer towards that brand. This motivation is input into Field Three where the motivation may or may not be transformed into brand purchase. Brand availability, in-store factors, and other influencing variables are said to mediate this transformation. The purchase that may emerge from Field Three is the input to Field Four which consists of operations such as storage and consumption, leading to brand experience. This experience serves as input to Field One.

Managerial Usefulness. The Nicosia model is useful in providing a framework for building a model of the buyer-seller relationship. The model is theoretically neutral and is quite capable of incorporating submodels derived from Bettman, Howard, Sheth and others. As a simulation the model could provide more detailed information than do the presently employed stochastic models.

Chapter Five -- SPECIFIC MODELS OF CONSUMER CHOICE

It is the purpose of this chapter to focus more clearly on the consumer choice process. Consumers do not generally have the means to acquire and interpret the total amount of information available for making a particular choice. Consequently, buyers often resort to simplifying rules of thumb, or decision rules in order to negotiate a decision situation cost beneficially. It is important for managers to understand these specific considerations a consumer might make in coming to a decision.

Consumer Decision Rules

I have suggested that decision rules can be viewed as components to the various large system models; this statement is somewhat misleading. Imbedded in the notion of consumer decision rules is a particular perspective. In such a perspective consumer choice is seen as a process whereby various pieces of obtained information are combined and integrated so that a decision among alternatives can be made. This is distinctly an information processing point of view, and is therefore more directly compatible with Bettman's theory than with that of Howard/Sheth or Howard's extension. Nicosia's model is flexible enough that these notions could easily be integrated into it.

The Howard/Sheth--Howard perspective has a heavy emphasis on brand concept learning has a cognitive orientation. Certainly the two perspectives are compatible, information processing is fundamental to cognition, but insofar as cognition is a higher order phenomena, building over long periods of time, specific and somewhat mechanistic decision processes are not easily treated in such a framework.

It may well be found that decision rules frequently manifest in RRB are different from those frequently manifest in LPS & EPS, yet analysis along these lines has been limited and indirect, so indicating an area for needed research.

The Nicosia model is more flexible and has a reasonably neutral theoretic perspective as it focuses on a methodology for simulation of consumer behavior. Insofar as the model's subroutines can be called throughout the various fields, I see little problem adapting decision rules into a form compatible with this model.

Basic Decision Rules:

A number of decision rules have been offered. Eleven such rules are identified, and are detailed here. Much of the terminology and framework used here comes from Bettman (1979). Furthermore, these rules can be seen as sharing a perspective whereby the overall evaluation of a product is a function of its attributes and of the consumer's perception of them. These rules represent not only a consumer's strategy for dealing with a complex choice environment, but an attempt by theorists to map physical product or service dimensions to perceptions and attitudes.

Affect Referral. Proposed by Wright (1975), this rule presumes that a consumer does not consciously examine the attributes of or beliefs about alternatives. Here the buyer merely draws on evaluations stored in memory. The selection process is therefore somewhat mechanistic. The rule is presumably most applicable for choices with which a consumer has a great deal of experience, or where product involvement is low. The affect referral rule those seems quite

compatible with Howard and Sheth's concept of RRB.

Linear Compensatory. Here alternatives are described in terms of multiple attributes, where any particular attribute (i) has associated with it an evaluation (V_i) and a weight (W_i) signifying its importance. An overall evaluation of a particular product (E) is then given as a linear weighted combination of the evaluations such that:

$$E = \sum_{i=1}^n W_i V_i$$

The model is termed compensatory because positive and negative attributes can balance or compensate for one another. It is usually presumed that a brand with the highest overall evaluation is chosen. This rule is also known as the 'ideal vector model' which is a special case of the 'ideal point model' discussed below.

This type of rule has been commonly used throughout consumer research, particularly in the development of multi-attribute attitude models, where evaluations are mapped in relation to the formation of intentions.

Another form of this rule is the linear averaging rule where the restriction that all the weights (W_{is}) must sum to one.

General Information Integration. This rule is a generalization of the linear compensatory rule whereby attribute evaluations and weights are combined, but not necessarily in a linear fashion. Here multiplicative or general polynomial combinations may be used to form overall brand evaluations.

An example of this is the ideal point model, which relies on the concept of a perceptual product space made up by product class attributes. The consumer's utility (evaluation) for a given brand is

related inversely to its weighted Euclidean distance from his/her ideal point.

Another version of the ideal point model is the conjoint measurement model which considers a finite number of levels for each attribute and thus allows the manipulation of the preference function through the manipulation of dummy variables.

Conjunctive. Here the consumer is presumed to maintain minimum standards for each product attribute or dimension. If any one attribute is deficient, the product is immediately eliminated from consideration. Hence this rule weights negative aspects quite heavily. The resultant overall evaluation for a product therefore takes the binary form of being satisfactory or not. Further refining of the product decision set can then be accomplished in a number of ways.

- iteratively, by changing the minimum standards
- immediately, by taking the first satisfactory alternative (conjunctive satisficing model)
- or by implementing another decision rule as a second stage of a two step process (listed below under phased processes)

Except for certain cases involving phased processes, this rule is generally non-compensatory where negative and positive attributes do

not balance.

Disjunctive. Here the consumer is presumed to develop acceptable standards for each attribute or dimension. These standards are unrelated to the notion of minimum standards because under this rule a product is accepted if it passes any standard on any attribute dimension. Again the final result is binary or polar with a product being satisfactory or not. Because of the indiscriminant nature of this model the first acceptable product is likely to be chosen, but a phased strategy is possible depending on the situation.

Maximax. A version of the disjunctive strategy, products are compared on the basis of their best attribute. The product with the highest rating on its best attribute is chosen.

Minimax. Another version of the disjunctive strategy, whereby products are judged on the basis of their weakest attributes. Here the product with the strongest weakest attribute is chosen.

Lexicographic. The presumption here is that attributes are first ordered in terms of their importance and then compared against the alternatives in a serial fashion. Here an alternative is chosen as soon as it exhibits superiority in the attribute being considered. Hence attribute comparison continues as long as previous comparisons resulted in an evaluative tie. An example of this rule would be an individual who thinks that price is most important and immediately chooses the least expensive alternative. Such a rule is therefore non-compensatory.

Sequential Rule. Here, as with the conjunctive rule, minimum attribute standards are established. Yet products are not evaluated on the basis of all attributes, but rather attributes are chosen one by one

and products not meeting the standards are eliminated. Here no specific rule for selecting the sequence of attributes to be examined is designated.

Elimination by Aspects. This is basically the same as sequential elimination except that the attributes are given different weights. Here an attribute is selected with a probability proportional to its weight, the alternatives are compared and the process continued until all but one alternative remains.

Lexicographic Semiorder. This rule modifies the lexicographic rule so that comparisons between the alternatives are made on the basis of salient (most important) attributes, but on a looser basis. Here a range of acceptable or insignificant differences for each attribute are specified, so that alternatives not exactly equal on the basis of a single attribute can be judged 'close enough' and the next most important attribute considered. Such a rule can thus lead to intransitive choices whereby A is chosen over B, B over C, and C over A.

Additive Difference. This rule also allows for intransitivity. Here the consumer is thought to consider two product at a time (A & B). First considered is the difference between subjective utilities for A and B on each attribute (i). Letting $U_i(A_i)$ and $U_i(B_i)$ represent these subjective utilities of attribute i, then the 'considered difference' can be represented as $U_i(A_i) - U_i(B_i)$. Differences such as these are evaluated for each attribute and each difference given a weight (w_i) thus specifying its importance in evaluating the product pair over all attributes. Then A is preferred to B if:

$$\sum_{i=1}^n w_i \{U_i(A_i) - U_i(B_i)\} \geq 0$$

While the rule reveals only the relative evaluation of alternatives and not an absolute ranking, an overall ranking can be constructed.

Phased Strategies. As has already been referred to, such is a hybrid rule whereby a first phase is employed to eliminate some alternatives and a second phase then employed to judge between the reduced set. It is particularly useful in coping with a complex choice situation by reducing the field of alternatives (a sort of noise reduction strategy).

Factors Affecting the Employment of Decision Rules.

Much research has been done to sort out which decision rules are used by which consumers. Shocker and Srinivasan (1979) in a review article of multi-attribute approaches cite research (Hansen 1976, White 1975) that suggests that while various consumers do use each of the models, those which require simpler cognitive processes are generally preferred. The compensatory models are considered to be cognitively less demanding over time insofar as an individual need only consider the balancing changes in the perceived attribute structure (perceptual structure) in order to modify a previously conceived preference structure. Models such as lexicographic and conjunctive while simpler for a discrete purchase, do not accrue the benefits of learning over time and can be more demanding cognitively. Shocker and Srinivasan point out the predictive ability of the compensatory model as demonstrated in a variety of studies (Braun and Srinivasan 1975; Dawes and Corrigan 1974; Green and Wind 1973...)

and thus conclude that it is usually adequate as a normative framework.

Certainly better than adequate decisions require a more thorough

probe into the issue. Bettman has suggested that a key factor in isolating when certain decision models are used is by determining the method through which consumers implement them. He outlines three interrelated sets of methods.

- Constructive vs stored methods. This differentiates between a consumers drawing on memory (stored) in order to make decisions vs an ad hoc construction of a rule.
- In-store vs prior methods. Referring here to how much a consumer will rely on in-store (or direct sales) information in order to make the purchase.
- Recognition vs recall methods. Referring to the differential use of memory among consumers in comparing alternatives. Some consumers are found to rely on recognising a product a product when they see it while they currently cannot recall it. Depending on the degree to which consumers rely strictly on recall methods consumers have been found to exhibit differing strategies (Eagle and Leiter 1964; Tversky 1973).

Bettman goes on to propose that the use of these methods and the subsequent choice of a decision rule is influenced by: individual differences and task factors.

Individual differences can be seen as consisting of varying levels of experience with and prior knowledge of the choice at hand, information processing constraints (bounded rationality), and personality factors.

As such a little experience leads to constructive, recognition, and in-store methods; whereby, more experience will lead to stored methods, recall, and prior methods. Along these lines Park and Sheth (1975) studied the effect product class familiarity had on manifest choice rules. The best fit for weighted linear compensatory rules was found under conditions of high familiarity, while the best fit for disjunctive and conjunctive models was under conditions of moderate familiarity.

These results support the notion that an elimination phase is likely to occur as a means of coping with unfamiliar choice situations.

Information processing constraints. These refer to the notion of mental capacity, and addresses the ability of various consumers to make efficient use of obtainable information so as to maximize satisfaction given a fixed set of resources allocated to the decision.

In one study Shugan (1980), building from studies of decision making or thinking costs, has looked into the implications such costs have on choice behavior. By defining a "fundamental unit of thought", formulas for computing costs of various decision rules were loosely derived. Within this framework he determined that conjunctive rules to be least expensive, followed by compensatory, maximin, and maximax rules. Combining these results with the consequences for inefficient purchases, an assessment of the effectiveness of such strategies is developed.

Personality Factors. This represents a broad category. On one level such is concerned with the importance an individual places on a decision; this will in many instances determine the effort a consumer will go to in making a decision and can have the de facto result in increasing the theoretic information processing constraint (at the expense of time). On another level this concept of importance can be manifest and tracked through specific personality variables such as anxiety and self-confidence, with such variables being linked to the choosing of decision rules as perceived by their risk reducing qualities.

Task Factors. These can be broken into five categories: 1) time

pressure 2)distraction 3)noncomparability of alternative scaling (extraneous data) 4)incomplete data and 5) task complexity. Much research has been done in this area, the results of a few such studies are listed below.

Wright(1974 a) examined both time pressure and distraction during active evaluation tasks and found that increases in such conditions caused individuals to weigh negative information more heavily, indicating a tendency towards conjunctive rules under those conditions. Similarly Wright and Weitz (1977) found that under time pressure, consumers tend to polarize attribute ratings with an associated greater tendency to reject lower attribute levels than was found in more leisurely conditions.

In another study Wright (1974 b) found that as incomparable scaling and extraneous data are introduced into a choice environment, consumers tended to reduce their use of compensatory rules and consequently increase the use of lexicographic rules. Other findings indicate that if in a situation one rule does not work, another may be used. A study of incomplete information by Slovic and MacPhillamy (1974) showed that under such conditions, strategies serving to reduce the importance of information deficient attributes emerge. Thus noticed is a tendency for consumers to weigh products on the basis of other attributes. However, contradictory results were found by Wright (1974 b). While reasons for this difference are not outlined, degree of product involvement and the consequent importance of making an efficient decision could be at work.

Task complexity is a broad notion which is related to the individual and that individual's capacity and perspective in the choice

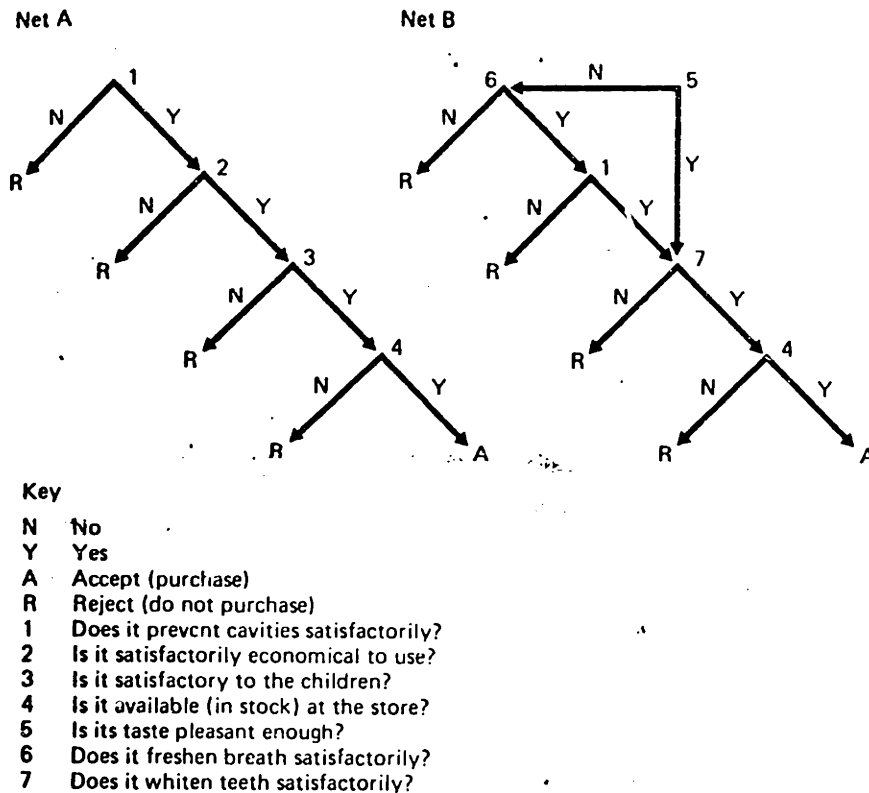
situation at hand. Some normative work along these lines has, however, been done. Lussier & Olshausky (1979) found brand choice strategy to depend on the number of products considered. They found a phased strategy to exist whereby a conjunctive stage was employed where choice alternatives were greater than three, with a subsequent compensatory stage where the alternatives number three or less.

Decision Nets

Decision nets are basically a more flexible way to identify an individual's decision rule. It is as much a methodology as it is a concept. The approach of decision net analysis is, quite simply, to observe an individual (or group of individuals) in a choice situation and map the decision process by which the consumer 'solves' the choice problem.

These nets are more flexible than the previously presented decision rules not only because they are tailored to the individual, but because they incorporate situational as well as product attribute factors. They are branching structures which are derived from an evaluation process and therefore presume no prior hypothesis. These empirical studies can be illuminating to the marketing manager who wishes a detailed knowledge of what the consumer's choice perspective is. An example of two such decision nets for toothpaste (demonstrating only attribute criteria) are shown in figure 5.1.

The drawback to decision net analysis rests with its ungeneralizability. The flexibility of the approach leads to a level of individual and situational detail which cannot easily be generalized over a consumer segment or population.

Figure 5.1, Decision nets for toothpaste: (from Bettman, 1979, p. 231)

Managerial usefulness of Decision Rule and Net Approaches.

Decision rules are basically very simple models of consumer behavior, and it is this characteristic which makes them both useful and simplistic.

They are simplistic insofar as they each capture a very small aspect of choice behavior. As a consequence one necessarily loses much of the richness of purchase behavior through their use. It becomes quite difficult to determine when this or that rule is likely to be invoked, yet reliance on any particular one is likely to give inaccurate results.

The power or usefulness of these rules comes with a more thorough

understanding of the kinds of situational, personal, and product factors that determine or influence when certain rules or rule types are used. In the preceding section I have attempted to outline some research whose purpose it was to look into these issues. Much more work is required before a truly normative understanding is reached. Nonetheless, as this knowledge builds, the concept of decision rules will become increasingly more important. This will especially be the case as more sophisticated attempts at simulating consumer behavior are undertaken. In such a framework each rule can easily be captured mathematically, and called on when needed to simulate a decision or part of a decision. Models built in such a manner are likely to generate robust results.

The methodology associated with decision net analysis will do much to point out choice consistencies or regularities upon which such a simulation theory will be built.

Chapter Six -- Current Topics and Conclusions

The field of consumer behavior is fundamental to marketing forming a natural link with the other fields intrinsic to marketing. A thorough treatment of the issues would necessarily include topics on group decision processes, segmentation, pricing, promotion, advertising, etc.. Such an analysis is left to other works and final treatment here will be restrained to a few interesting topics.

The prevalence of decision making. An implicit assumption to the whole of this analysis is that consumers do make discernable decisions on a frequent basis. Olshausky and Granbois (1979) present a review of research indicating that a substantial portion of purchases do not

involve significant decision making, not even for the first purchase of a product class. Instead, other situational, social, and cultural influences are emphasized as the overriding determinants of consumer behavior. Purchases of necessity, habit, conformity or imitation are identified as most prevalent, and it is suggested that theory should be broadened to account for such. In the framework of the Howard/Sheth model this is reflected in their lack of theoretic emphasis on the role of the endogenous variables in mediating behavior. In the decision rule framework, this view would cause one to endorse Wright's concept of "affect referral" as a widely employed decision strategy.

Purchase Intentions. Marketing managers and advertising executives have long used measures of purchase intention to predict sales and evaluate media campaigns. A predominant model serving to explain intentions has been forwarded by Fishbein and states that an individual's purchase intention and subsequent behavior is a weighted sum of both, 1) the individual's belief about the benefits or consequences of performing a behavior, and 2) the individual's belief about what others expect concerning his or her performance of the behavior and the individual's interest in living up to such perceived expectations. This model has been found valid as a predictor of behavior (Ryan & Bonfield, 1980) and quite attractive as a link between underlying personal and social variables with a good surrogate for actual purchase behavior.

Additional insight has been provided by research designed to take the Fishbein model a step further by investigating the link intentions has to actual purchase behavior. Morrison (1979) outlines a model

linking stated intention to true intention to an unadjusted purchase frequency to a final purchase probability. By fitting a beta binomial model to purchase data for automobiles and appliances, he demonstrates high predictive validity for his linking scenario.

Not so impressed with Fishbein results is Warshaw (1980) who developed a model that "works back from behavior". The result is essentially a conditional probability paradigm which equates purchase intention to the product of the probability of purchasing from a product class and the conditional probability that given such a purchase, a specific member product is chosen. The evaluation of the conditional probability is said to be extractable from a number of methods (Fishbein included) and boasts both flexibility and broad based validity.

The notion of a product class. The concept of a product class has been a thread throughout this work. It has been seen as central for: partitioning within the Hendry system, goal hierarchy development for Bettman, as well as providing an object of learning for Howard and Sheth. Furthermore, the multiattribute decision rules discussed for the most part presuppose that alternatives are chosen independently from the same product class.

Adding another dimension to this, McAlister (1979) noted that consumers often choose selections from a product class in order to "balance" or "round out" a collection of items (ie. magazines, stereo records, liquor). This notion implies a dependence among such selections and provides the basis for the concept of "attribute satiation" which in turn provides a more comprehensive way to categorize and interpret product classes and their influence on consumer behavior.

Psychological Freedom. Consumers are constantly being bombarded by commercial impositions. Clee and Wicklund (1980) outline a theory of psychological freedom whereby manipulative advertising, aggressive promotion, product unavailability, and Government regulations are all viewed as potentially freedom threatening events. They apply the sociological concept of psychological reactance in order to predict and interpret a consumer's reply to such freedom reducing threats. The article provides an interesting viewpoint on the dynamic nature of the firm - consumer interaction.

Conclusions

Work in the consumer behavior field has often been categorized as disjoint. It still remains so and much work must be done to bring together all the good research that has been performed.

One of the keys to this process is the development of a common set of terms or language with which to describe behavioral phenomena. Differing perspectives often give different names to essentially the same phenomena. This matter must be reconciled, at least in part, so that a practicing manager may become fluent in these matters more easily.

A second key to this process is the reduction of importance of the stochastic/ behavioral distinction. In order to become more diagnostic, stochastic models (the traditional tool of the management scientist) must incorporate some more behavioral theory. And the behavioral models, in order to become more normative, will have to simulate some of their deterministic subsystems into stochastic processes.

A third key is the adoption of a modeling approach which is

flexible enough to draw from the various consumer theories for application in situations where they have been deemed to best fit. The Nicosia model was presented a good first attempt to do just this. Little work has been done in the consumer behavior field to expand this approach.

Another important consideration in the ultimate use of consumer models lies with the patience of the manager to take time to understand them, and consequently, the consumer. It is not necessary that consumer theories be totally operationalized, rather that managers have a familiarity with concepts so that their everyday observations may be more insightful, and their methods more effective.

I have attempted to present a variety of models and theories in this work with the primary purpose of developing a solid theoretical grounding from which the reader can develop a more unified perspective.

The secondary purpose of this work was to supply the reader with specific models to be used as tools. It is concluded that one not borrow wholesale a model or technique... rather one should take the model, understand it, adapt and tailor it to the specifics of a situation, and continue to update or evolve it as more information becomes available.

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