Graduate School of Business Administration
University of Michigan

November, 1970

BUREAU OF BUSINESS RESEARCH WORKING PAPER
NO. 13

THE THEORY OF DOUBLE JEOPARDY AND ITS CONTRIBUTION TO UNDERSTANDING CONSUMER BEHAVIOR

by

Claude R. Martin, Jr.
Assistant Professor of Marketing
University of Michigan

BACKGROUND OF THIS PAPER

This paper is the result of research sponsored by the Bureau of Business Research. The data bank was provided by Market Research Corporation of America through financing by the Graduate School of Business Administration University of Michigan.

This is a report on a completed phase of continuing research into the relevance of several behavioral theories, developed outside the marketing discipline, to the prediction of aggregate consumer behavior. One of these theories, called double jeopardy, was initially explored by sociologist William N. McPhee.[1/]

HYPOTHESIS

When put into a marketing context the double jeopardy phenomenon predicts that "the more popular a brand, the more loyal its buyers." The specific hypothesis which was tested was:

> The larger the proportion of buyers of a product who buy a particular brand, the larger will be the proportion of those buying the brand who will be loyal to that brand.

Thus the term "brand loyal" describes a buyer who devotes the greatest proportion of his purchases of a product to a particular brand.

DATA

Phase One

The first phase of the testing involved exploring the purchase records of the 199 members of a consumer panel. These records are maintained by Market Research Corporation of America (MCRA) which is in the Chicago metropolitan area. The data covered thirteen different nondurable product categories, all of which include frequently purchased items, and spanned 18,804 purchases over a full calendar year.

[1/] William N. McPhee, Formal Theories of Mass Behavior (New York: The Free Press of Glencoe, 1963), pp. 104-169.

Phase Two

The second phase involved a full year of data from the national MRCA panel. The following three product categories were used:

1. Dentifrice. This was chosen because it had been used previously in a preliminary test of the hypothesis.[2/] The purchases of 33,710 units by 6,248 households were analyzed.

2. Coffee. The coffee category was chosen because it had been used in the exploratory test among Chicago panel members. The purchases of 153,548 units by 8,075 households were analyzed.

3. Sanitary protection. This was chosen because in most cases it represents a personal purchase and is not bought in connection with the housewive's role as "purchasing agent" for the family. The purchases of 21,948 units by 4,133 households were analyzed.

ANALYSIS

Definition of Loyalty

Although a person who is brand loyal devotes the greatest proportion of his purchases to a particular brand, there are two ways of measuring this devotion: (1) by frequency of purchases, or (2) by weight (volume) purchased. Moreover, a person might devote the same largest proportion of his purchases equally to different brands and thereby create "ties." Thus frequencies both including and excluding persons with such ties were analyzed. Four specifications of brand loyalty were tested:

1. Loyalty in terms of weight and including ties

2. Loyalty in terms of weight and excluding ties

[2/] Abe Shuchman, "Are There Laws of Consumer Behavior?" Journal of Advertising Research, Vol. 8 (March, 1968), 19-27.

3. Loyalty in terms of purchases and including ties

4. Loyalty in terms of purchases and excluding ties

For the analysis of the purchase records of the 199 members of the Chicago panel the ten best-selling brands were included in all but three of the product categories. The analysis of the more comprehensive national panel data used the ten best-selling brands of the three product categories of coffee, dentifrice, and sanitary protection.

The leading brands were rank-ordered from largest to smallest on the basis of the probability that a buyer had purchased that brand at least once. Then the respective rankings were computed of the conditional probabilities that a family devoted the greatest proportion of its purchases to a particular brand. This conditional probability was based on the four differing definitions of brand loyalty.

The relationship tested was symbolized as:

Pr(Bi) = probability of a family having made at least one purchase of brand i

Pr(Ci/Bi)= conditional probability of a family devoting the greatest proportion of its purchases to brand i, when it has made at least one purchase of brand i

Pr(Bi) was computed by dividing the number of families having tried a brand (i) by the total number of families having purchased that product. Pr(Ci/Bi) was obtained by dividing the number of families devoting the greatest proportion of their purchases to brand i by the number of families who made at least one purchase of brand i.

RESULTS

The Chicago Study

Table 1 uses the thirteen product categories to show the Spearman rank-order correlation coefficients for the relation between Pr(Bi) and Pr(Ci/Bi). Within each category only the leading brands were used. This is an expansion of an earlier report of results which only included ten categories.[3/]

The key question, of course, was how significant are these results? Using the "Table of Distribution of E (d^2)" for Spearman's rho found in Kendall,[4/] the probability of independence between Pr(Bi) and Pr(Ci/Bi) was calculated. Examination of Table 2, which depicts these probabilities, leads to the conclusion that the null hypothesis of independence should be rejected.

The National Study

The conditional probabilities of brand loyalty for the ten leading brands of each of the three products are shown in Tables 3, 4, and 5. The respective rank-order correlation coefficients for the four different definitions of brand loyalty are shown in Table 6. These are all significant at the .05 level.[5/]

3/ Ibid., p. 27

4/ Maurice G. Kendall, The Advanced Theory of Statistics, Vol. I (London: J. B. Lippincott Co., 1942), p. 396.

5/ Signey Siegel, Non-Parametric Statistics for the Behavioral Sciences (New York: McGraw-Hill Book Co., 1956), p. 284.

TABLE 1
RANK-ORDER CORRELATION COEFFICIENTS FOR THE RELATION BETWEEN Pr(Bi) and Pr(Ci/Bi)[a/]

Product Category	Pr(Ci/Bi) Based on Purchases		Pr(Ci/Bi) Based on Weight Purchased	
	No Ties	Ties Included	No Ties	Ties Included
Canned peaches	+.652	+.842	+.870	+.858
Canned peas	+.266	+.624	+.505	+.491
Toilet soap	+.909	+.976	+.882	+.882
Frozen concentrated orange juice	+.948	+.964	+.903	+.915
Canned tuna fish	+.616	+.636	+.686	+.676
Rice	+.952	+.709	+.797	+.588
Canned citrus juices	+.842	+.724	+.809	+.833
Oleomargarine	+.782	+.855	+.818	+.842
Regular coffee	+.830	+.818	+.894	+.930
Cake mixes	+.891	+.821	+.842	+.842
All-purpose flour	+.846	+.896	+.867	+.892
Scouring cleanser	+.763	+.954	+.787	+.804
Toilet tissue	+.723	+.723	+.723	+.750

[a/] With three exceptions the number of brands included was ten. The exceptions were for scouring cleanser (n=9), all-purpose flour (n=9), and toilet tissue (n=7).

TABLE 2
PROBABILITIES OF INDEPENDENCE BETWEEN
Pr(Bi) and Pr(Ci/Bi)

Product Category	Pr(Ci/Bi) Based on Purchases		Pr(Ci/Bi) Based on Weight Purchased	
	No Ties	Ties Included	No Ties	Ties Included
Canned peaches	.02200	.00140	.00080	.00110
Canned peas	.22400	.02700	.06700	.07200
Toilet soap	.00027	.00000	.00057	.00057
Frozen concentrated orange juice	.00005	.00001	.00027	.00017
Canned tuna fish	.03000	.02500	.01500	.01600
Rice	.00003	.01200	.00360	.03700
Canned citrus juices	.00140	.01000	.00290	.00200
Oleomargarine	.00440	.00110	.00240	.00140
Regular coffee	.00190	.00350	.00040	.00010
Cake mixes	.00040	.00260	.00140	.00140
All-purpose flour	.00300	.00100	.00150	.00120
Scouring cleanser	.00980	.00008	.00690	.00540
Toilet tissue	.03300	.03300	.03300	.02400

TABLE 3
CONDITIONAL PROBABILITIES OF BRAND LOYALTY
TEN LEADING BRANDS OF DENTIFRICE

Brand	Pr(Bi)	Pr(Ci/Bi) Based on Purchases		Pr(Ci/Bi) Based on Weight	
		Ties Included	No Ties	Ties Included	No Ties
A	.40365	.67645	.54560	.63719	.59080
B	.49856	.72199	.59422	.68475	.63981
C	.05202	.28308	.13231	.22462	.16923
D	.04978	.30547	.16077	.17363	.17363
E	.28073	.52851	.37685	.48917	.42645
F	.05202	.42154	.29538	.32615	.32615
G	.06130	.67363	.52219	.46736	.44909
H	.12100	.50794	.36243	.45503	.40212
I	.14389	.47608	.32703	.42492	.37152
J	.09459	.39255	.23689	.32826	.26904

TABLE 4
CONDITIONAL PROBABILITIES OF BRAND LOYALTY
TEN LEADING BRANDS OF SANITARY PROTECTION

Brand	Pr(Bi)	Pr(Ci/Bi) Based on Purchases		Pr(Ci/Bi) Based on Weight	
		Ties Included	No Ties	Ties Included	No Ties
A	.06170	.62353	.47059	.58039	.49804
B	.57876	.79264	.67015	.75920	.70401
C	.04549	.47872	.26596	.40957	.35106
D	.10719	.38826	.20767	.34763	.24379
E	.01839	.50000	.32895	.43421	.43421
F	.27075	.68722	.53977	.61574	.58981
G	.11009	.63956	.47253	.56484	.49451
H	.02444	.33663	.12871	.21782	.12871
I	.02468	.48039	.31373	.25490	.17647
J	.37479	.67786	.53454	.63783	.57327

TABLE 5
CONDITIONAL PROBABILITIES OF BRAND LOYALTY
TEN LEADING BRANDS OF COFFEE

Brand	Pr(Bi)	Pr(Ci/Bi) Based on Purchases		Pr(Ci/Bi) Based on Weight	
		Ties Included	No Ties	Ties Included	No Ties
A	.08793	.30845	.24930	.25211	.23803
B	.34217	.47159	.40536	.47748	.44155
C	.59777	.43402	.37104	.41641	.38761
D	.22712	.33969	.28790	.23991	.23010
E	.08074	.22202	.17454	.20663	.19015
F	.24310	.33622	.26643	.34845	.31024
G	.13238	.30028	.23667	.24135	.23012
H	.09251	.27443	.23427	.27711	.25837
I	.10303	.26683	.21274	.22957	.21154
J	.27724	.22888	.17548	.21526	.19074

TABLE 6

RANK-ORDER CORRELATION COEFFICIENTS
Pr(Bi) TO Pr(Ci/Bi)

Product	Definition of Brand Loyalty			
	Units Purchased		Weight Purchased	
	Ties Included	No Ties	Ties Included	No Ties
Dentifrice	+.8152	+.8152	+.9121	+.8152
Sanitary protection	+.7697	+.7697	+.9061	+.7940
Coffee	+.6970	+.6970	+.6122	+.6122

Conclusions

The validity of conclusions reached when hypotheses are tested statistically is, of course, a function of the data available. Obviously it would be dangerous to make a generalization about the application of the double jeopardy proposition to behavior in connection with all classes of products. Despite this danger, there is a strong positive relation indicated between the proportion of buyers of a product who buy a particular brand at least once, and the proportion of those buyers of the brand who are loyal to that brand. To phrase it more loosely, the more popular a brand, the more loyal its buyers.

IMPLICATIONS FOR KNOWLEDGE OF BUYER BEHAVIOR

Analytical Framework

The implications of the double jeopardy phenomenon for our knowledge of buyer behavior were examined by scanning the analytical framework into which the phenomenon could be inserted.

Nature of a Science

A science can be considered an interplay between theory and empirical evidence. "Connecting the two are rules of correspondence which serve the purpose of defining or partially defining certain theoretical constructs in terms of observable data."[6/]

Margenau has diagrammed this interplay between theory and data as shown in Figure 1.[7/] The circles to the left of the observable data stand for the theoretical concepts, and the double lines are the rules of correspondence between theory and observable data.

[6/] Warren S. Torgerson, Theory and Methods of Scaling (New York: John Wiley & Sons, Inc., 1958), p. 2

[7/] R. Margenau, The Nature of Physical Reality (New York: McGraw-Hill Book Co., 1950), chaps. v and xii.

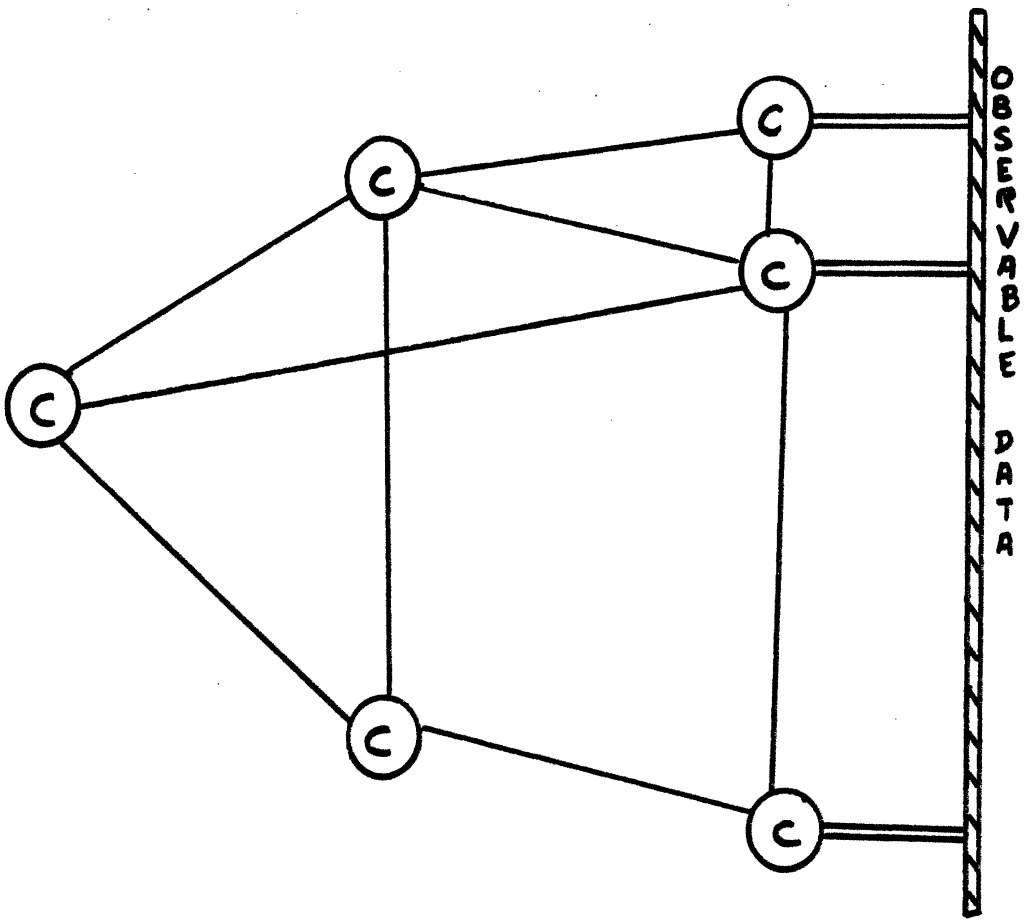

FIGURE 1: Margenau's illustration of the interplay between theory and data.

Thus, the double lines are the empirical, experimental procedures that link the theoretical constructs to the data. The single lines indicate the formal, logical relations between theories.

Marketing as a Science

Where does marketing stand in its development as a science? There are a wealth of observable data and many constructs. There is, however, a serious shortage of interconnections between the theory and the data, and partly for this reason there is a serious shortage of tested relations among the constructs. This might also be interpreted as a serious shortage of marketing knowledge. Torgerson, in his discussion of the stance of social and behavioral sciences, depicts the interplay between theory and data as shown in Figure 2.[8/]

In Torgerson's illustration there are two sets of theoretical concepts: those on the far right (juxtaposed to the observable data), which are interconnected and which have rules of correspondence to the observable data; and those on the left, which are also interconnected, but which have no operational definition. The constructs on the right have rules of correspondence which enable numbers to be attached to the objects possessing them. The degree of relation between the constructs is then defined and expressed in a mathematical form. The dotted lines stand for a presumed relation between the construct with operational meaning and the equivalent construct with constitutive meaning.

Marketing, like most of the other behavioral and social sciences, is not the well-developed science which Margenau depicts. It is closer to the stage conceptualized by Torgerson. Significant development is

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[8/] Torgerson, Theory and Methods of Scaling, p. 5

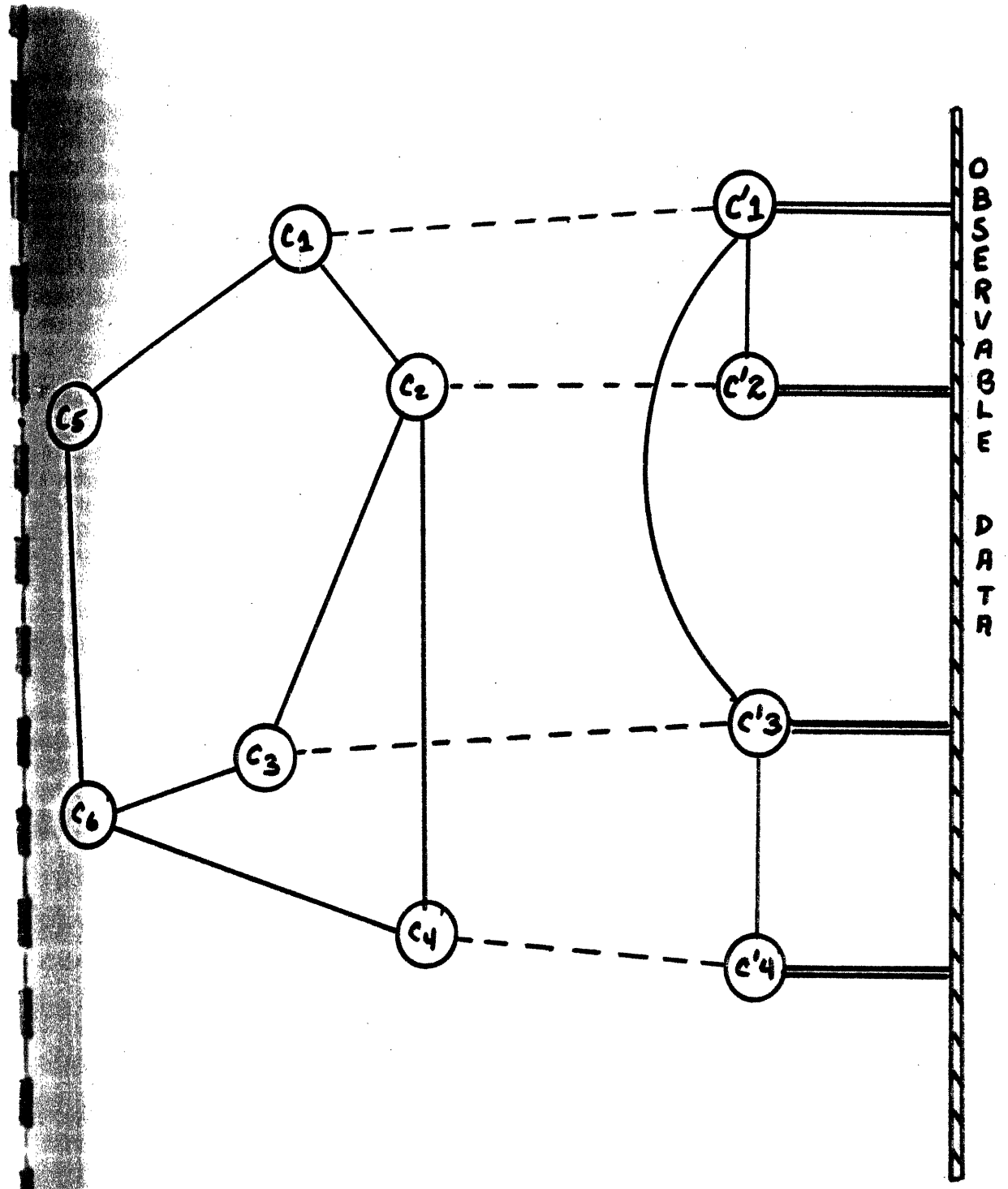

FIGURE 2: Torgerson's illustration of the interplay between theory and data.

virtually impossible for a science unless the interplay or the intervening variable which exists between the theory and the data can be defined. If an interplay can be defined and measured, a theory in a mature science can be accepted or rejected on the basis of the agreement between the predicted theory and the observed data.

In Figure 3, if A' and B' vary together, we can say we have tested the hypothesis that A varies with B, and the relationship between these hypothetical constructs has been confirmed.

In marketing, the interconnections between A and A' and B and B' are presumed relations between the theory and the data, not predictive relations. Torgerson summarizes his aspect of marketing science by saying, "The concepts of theoretical interest tend to lack empirical meaning, whereas the corresponding concepts with precise empirical meaning often lack theoretical support."[9/]

To put it simply, if the relation among two or more of the hypothetical constructs is redefined, then the dotted lines of the Torgerson diagram (Figure 2) can be solidified and the interconnection can be made between the theory and the data. When this interconnection is made solid, then the predictive relation forms what can be described as a law of behavior.

The interconnection can be labelled an intervening variable which links the observable to the unobservable. The unobservable might better be defined as hypothetical concepts, which can be subdefined as specified and unspecified.

Hypothetical concepts. The definition of a specified concept contains a relatively specific statement of properties to be observed on the perceptual plane (observed data). For a discipline to mature

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9/ Ibid., p. 8

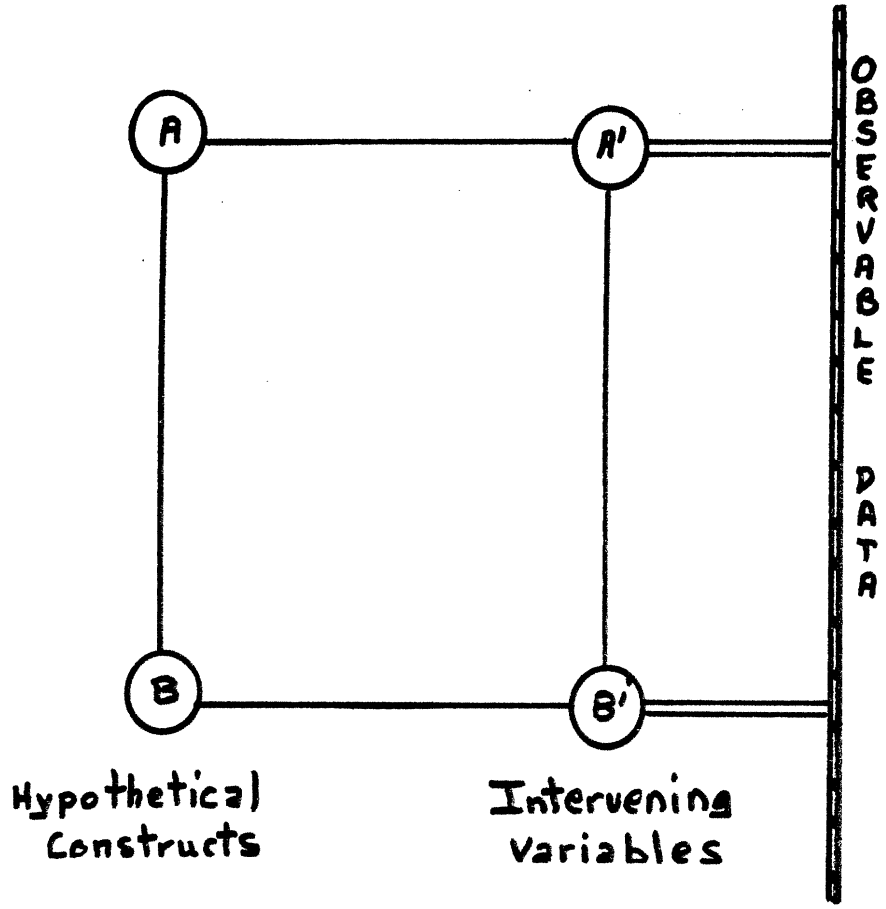

FIGURE 3: The role of intervening variables in the interplay between hypothetical constructs and observable data.

as a science there is a necessity to connect the conceptual with the perceptual, and this can be accomplished only when there are specified hypothetical concepts. Sheth, in his discussion of specificity, sets forth the notion that theoretical concepts begin life with an unspecified nature and then acquire specificity as research proceeds toward finding explicit points.[10/] Finally there is a marriage between these theoretical concepts.

Cronbach and Meehl describe this interlocking system between the perceptual and the conceptual as a nomological network. [11/] In their discussion of this concept and the philosophy of science they give some fundamental principles, one of the most important of which we can examine by referring to Figure 3. The principle illustrated here is that the laws in a nomological network can explore or confirm three basic relationships: A' is related to B', A is related to A', or that A and B are related. It should be pointed out that these laws may be statistical or deterministic. Thus, to learn more about any theoretical construct it is necessary to explore more fully the nomological network in which that construct occurs and to define more precisely the components of that construct. In this process the scientist does have a certain amount of freedom in selecting the points for modifying the network, and there may be a defensible position for reorganizing the network or for using alternative constructs.

It can be concluded, therefore, that a mature science is the result of an evolutionary process which extends from unspecified

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10/ Jagdish N. Sheth, "A Review of Buyer Behavior," Management Science, Vol. 13 (August, 1967), 721-22.

11/ Lee J. Cronbach and Paul E. Meehl, "Construct Validity in Psychological Tests," Psychological Bulletin, Vol. 52 (July, 1955), 281-302.

hypothetical concepts at one end of the spectrum to a firmly interconnected, predictive system (or model) at the other end.

Intervening variables. Paul Lazarsfeld has suggested two characteristics of intervening variables: (1) they are probabilistically, rather than deterministically, related to hypothetical concepts, and (2) they form an index or composite measure consisting of a number of indicators observed on the perceptual plane.[12] Sheth indicates that the role of intervening variables is to provide the "how" aspect of the observable data, while the "why" aspect is provided by the hypothetical concepts.[13]

Hilgard further defines intervening variables as having "no properties other than those expressed in its units of measure, that is, it need have no independent existence, apart from the functional relationships it has in its systematic context."[14] By implication, the hypothetical constructs do have surplus meaning--that is, meaning that is extra to their counterpart intervening variable. The notion of a counterpart intervening variable can be illustrated by using the hypothetical construct of attitude, which can be broadly defined. Attitude has a measured counterpart intervening variable that is defined as a verbal statement of preference. The hypothetical construct can be labelled attitude and the counterpart intervening variable can be labelled attitude'.

12/ Paul E. Lazarsfeld, "Latent Structure Analysis," in Psychology, A Study of a Science, Vol. III, ed. by Sigmund Koch (New York: McGraw-Hill Book Co., 1959), pp. 476-543.

13/ Sheth, "A Review of Buyer Behavior," p. 741.

14/ Ernest R. Hilgard, Theories of Learning (2d ed; New York: Appleton-Century-Crofts, 1956), p. 12.

The intervening variables developed so far in marketing have been labelled peninsular in that they have rules of correspondence to observable data, but no theory. [15] Added to this is the fact that the relation between those hypothetical constructs that have been developed and the observable data is either tenuous or nonexistent. This is because there are no counterpart intervening variables which have good rules of correspondence connecting them to the hypothetical constructs. Thus marketing, so far, has not produced a nomological network that connects the hypothetical constructs to reality (data). A realistic evaluation of marketing as a science indicates that it lacks maturity because of the independent existence of peninsular intervening variables and insular hypothetical concepts.

Howard's Model of Buyer Behavior

There is a rigorous, specific conceptualization of buyer behavior in the model formulated by Howard[16] and refined by Howard and Sheth,[17] which utilizes a central process of learning. Howard does offer a set of concepts with formal connections forming a model. However, the Howard model does not have the rules of correspondence which could connect the model to the empirical world. Thus, the model is not a theory subject to empirical testing. "Until empirical interpretations can be given to a sufficient number of its terms, the model, along with all of its terms, lacks empirical import, and does not constitute a

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[15] Sheth, "A Review of Buyer Behavior," pp. 741-42.

[16] John A. Howard, Marketing Management, Analysis and Planning (rev. ed.;Homewood, Ill.: Richard D. Irwin, Inc., 1963), chaps. iii and iv.

[17] John A. Howard and Jagdish N. Sheth, The Theory of Buyer Behavior (New York: John Wiley & Sons, Inc., 1969).

scientific theory."[18] The reason for choosing Howard's model is two-fold: (1) it is complex theoretical research,[19] and (2) it forms the workable base for a marriage between conceptual and perceptual planes that will effect marketing's maturity and its acceptance as a true science.

The Howard model has fulfilled some of the principles advanced by Cronbach and Meehl,[20] by relating different theoretical constructs to each other and, to some extent, some of the observable properties to each other. In fact, Howard's theory does at least imply some relation between the hypothetical constructs and the potential counterpart intervening variables. But the nomological network is far from complete, and the major element missing is a firm connection between the conceptual constructs and the observable plane.

How, then, does Howard's model fit into the scheme of a science? Basically, Howard says that buyer behavior is the result of predisposition (P), times drive (D), times incentive potential (K), times intensity of the cue (V).[21] Thus, B (behavior) is equal to P x D x K x V. The model does partially fulfill a stipulation for a nomological network by presenting well-developed hypothetical constructs and by postulating the interconnections between these constructs. The missing link centers around a complete and firm interconnection of the conceptual constructs to the observable plane.

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[18] Torgerson, Theory and Methods of Scaling, p.4.

[19] Sheth, "A Review of Buyer Behavior," p. 734.

[20] Cronbach and Meehl, "Construct Validity in Psychological Tests," pp. 281-302.

[21] Howard, Marketing Management, Analysis and Planning, pp. 43-45.

If the counterpart intervening variables for each one of the hypothetical constructs can be identified and the variance between these intervening variables tested, then the relationship for variance between the hypothetical constructs will be tested. This means that for each of the hypothetical contructs (D, K, V, P) there should be counterpart intervening variables (which could be labelled D', K', V', P'). In reviewing Howard's theory the only counterpart intervening variable that has been clearly inferred in relation to a hypothetical construct is habit to predisposition. Howard has not developed the counterpart intervening variables (D', K', and V') for the other hypothetical constructs in his model (D, K, and V).

Double Jeopardy as a Theory

How, then, does this study fit into the Howard model and help to makethat model into a scientific theory? Torgerson, in his discussion of the evolutionary steps needed for transforming the behavioral and social sciences into maturity, says there is a need to redefine the hypothetical concepts in more precise terms that are in line with the rules of correspondence to the observable data.[22/] Also, in many cases, the investigation of possible rules of correspondence can lead to respecifying intervening variables that are closest to the observable data. In fact, these redefinitions of both the hypothetical concepts and the intervening variables are in keeping with the principles advanced by Meehl and Cronbach[23/] and with the very nature of an intervening variable as described by Hilgard.[24/]

[22/] Torgerson, Theory and Methods of Scaling, p. 7.

[23/] Cronbach and Meehl, "Construct Validity in Psychological Tests," p. 290.

[24/] Hilgard, Theories of Learning, pp. 12-13.

The major concern of this study was with predisposition, described as "an inward response tendency,"[25] and with establishing the rules of correspondence between it and the observable world. The double jeopardy phenomenon predicts a positive relation between the relative popularity of a brand (based on the proportion of people who buy that brand at least once) and the conditional probability of brand loyalty. This concept of brand loyalty is easily adapted to the Howard definition of "inward response tendency," and certainly is not in disagreement with the theoretical notion of habit with which he connects predisposition to the observable plane. Therefore, the conclusion is that predisposition is probabilistically related to the relative popularity of a brand, a readily observable intervening variable. The facts that, wherever possible, the buyer does rely heavily on experience in choosing brands and that learning (habit) can be measured in terms of the probability of making the particular response are consistent with the central nature of the Howard model.[26] Howard's contention is that there is a positive relation between the number of trials or purchases of a brand and the probability of repeated response.[27] The double jeopardy phenomenon implies there is a relation between relative popularity of the brand and the conditional probability of brand loyalty. Thus the counterpart intervening variable for predisposition is now "probability

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[25] Howard, Marketing Management, Analysis and Planning, p. 44.

[26] Ibid., p. 36.

[27] Ibid., pp. 35-37. See also A. A. Kuehn, "An Analysis of Consumer Behavior and Its Implications for Marketing Management" (unpublished Ph.D dissertation, Carnegie Institute of Technology, 1958), chap. iii; and A. A. Kuehn, "Consumer Brand Choice as a Learning Process," Journal of Advertising Research, Vol. 2 (March, 1962), 13.

of purchase" (defined as the relative popularity of the brand). The notion of inward response tendency does have a larger meaning than this concept of probability of brand loyalty. However, added meaning is in keeping with the very nature of a hypothetical concept.[28/]

It is hoped that future research will pinpoint the interconnections between relative popularity and the other counterpart intervening variables. However, it is first necessary to define specifically those other counterpart intervening variables. It is also necessary to measure the relation between those variables and their hypothetical constructs.

CONCLUSIONS

It seems pretentious to label double jeopardy as a law of buyer behavior. However, the confirmation of the phenomenon does link together observable and unobservable concepts that fit accepted criteria for a science--where science is defined as a quest, not for certainty, but for a predicted knowledge of the future which is merely a "description of certain empirical regularities that have been laboriously isolated under a limited range of specified conditions of observation."[29/]

While predisposition has been narrowly defined, it is obvious that this variable has surplus meaning, if for no other reason than its interconnection with the other hypothetical concepts of drive, intensity of the cue, and incentive potential. But surplus meaning, as was pointed out before, is the very nature of a hypothetical concept, and the fact

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28/ Hilgard, Theories of Learning, pp. 12-13; and Sheth, "A Review of Buyer Behavior," pp. 720-22.

29/ A. S. C. Ehrenberg, paper presented to the Market Research Council, Yale Club, New York City, April 15, 1966, p.4.

that the surplus has not been rigorously defined does not invalidate the conclusions reached. In their work on the validity of constructs, Cronbach and Meehl offer the following comments:

> ...the vague, avowedly incomplete network still gives the constructs whatever meaning they do have. When the network is very incomplete, having many strands missing entirely and some constructs tied by only tenuous threads, then "implicit definition" of these constructs is disturbingly loose...[30]

The best that can be said is that, in this case, the construct has been adopted and not demonstrated as "correct." Obviously, there is a need to experiment with the use of other products to reaffirm or deny the validity of the double jeopardy theorem. In this process and, ideally, in the testing of the relation between other intervening variables and predisposition, there will be a more precise definition of just what predisposition is. In other words, further research should help to identify some of the unknown surplus meaning of this hypothetical concept and thus reduce vagueness in the overall nomological network.

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[30] Cronbach and Meehl, "Construct Validity in Psychological Tests," p. 294.

OTHER WORKING PAPERS

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