

THE SYSTEMS CONCEPT IN MARKETING:
A SURVEY OF THE CHANNELS OF DISTRIBUTION ASPECT

by

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ABSTRACT

A relatively new body of literature dealing with the concept of system has become more noticeable on the horizons of business thought in recent years. At the same time, some of this new systems literature has begun to permeate marketing thinking and is being reflected in the marketing literature. This thesis is concerned with surveying both the systems and marketing literatures in an attempt to establish some consensus as to the usage and understanding of the systems concept when applied to marketing. Due to the very broad possible nature of such a survey, only channels of distribution are involved in a depth surveying. Necessarily, however, the concept of "marketing system" has to be developed in order to integrate the channels of distribution literature with that of marketing and to provide a useful first step in integrating the systems concept into marketing thinking.

The research question involves investigation of how the term "system" is employed in the marketing literature dealing with channels of distribution.

The methodology employed to conduct the survey involves three major and clearly distinct steps. In the first step the literature dealing with the concept of system is surveyed

and an attempt is made to establish a consensus as to the general content of that body of writings. This first step is necessarily brief and, while it is not contended that a consensus from the literature is established, at least a position is taken of describing the nature, meaning, and content of systems.

The second step is a transitional one involving an integration of the systems literature with the marketing literature. Thus, a broad framework is established to permit a more detailed integration of particular aspects of marketing with the systems literature.

The last step involves a somewhat more detailed survey of the literature dealing with channels of distribution that appears to utilize some aspects of the systems concept. This literature is appraised and evaluated and some statements are made as to how such writings can be improved and clarified.

The conclusions that this thesis presents are general in nature. A first step in integrating the marketing literature that can employ the systems concept is provided. At the same time, a great many irregularities and inconsistencies are clarified and some attempts made to correct them. Some suggestions are made as to topics in marketing requiring elabo-

ration before it is possible to talk extensively and meaningfully of the concept of marketing channel systems. Finally, some tentative hypotheses are postulated as to usage of systems concepts in marketing.

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CHAPTER I

INTRODUCTION

A. FOREWORD

In recent years a new and growing body of literature dealing with the concept of system has begun to permeate marketing thinking. The new literature is becoming increasingly more noticeable and, at the same time, more diffuse and more confusing. In general, a lack of consensus as to the meaning and content of the systems concept seems to be evident. When applied to marketing, the new concept of system appears to be incompletely or improperly used. Such a situation has not helped a potentially very useful concept to be of service in furthering an understanding of marketing.

If the above is true, it would seem to be very helpful in understanding the growing body of literature dealing with systems in marketing if a survey were made of the marketing literature. Such a survey would help to clarify and to integrate

the marketing literature with the systems literature. Thus, some consensus might be established as to the meaning and content of the systems concept when applied to marketing.

While such a broad survey would be extremely valuable, the scope of such a study would be so wide as to render it almost unmanageable in length. Thus, the survey presented in this paper will place particular emphasis on the literature dealing with channels of distribution. By placing the concentration on one topic area, a useful first step is provided in integrating the systems literature with that of marketing.

Channels of distribution were chosen for study because of their seemingly close relevance to the concept of system. One of the tasks of the survey presented in these pages will be to compare the marketing literature dealing with channels of distribution to that of systems. Thus, the anticipated clarification and integration of the marketing literature using the systems concept will be begun.

B. AN INTRODUCTION TO THE SYSTEMS CONCEPT

Writers and researchers generally concerned with systems theory usually define a system as being a group or collection of interrelated and interdependent components or activi-

ties, often synergistic in nature.¹ The synergistic² aspect is usually present in systems definitions since it is proposed that the total effect of the system is greater than the sum of the effects of the parts taken individually.

Kenneth Boulding has postulated that systems exist at different levels:

CLASSIFICATION OF SYSTEM LEVELS³

<u>Level</u> ⁴	<u>Brief Description</u>	<u>Example</u>
1	Static system	Picture
2	Mechanical or clockwork	Automobile or clock
3	Cybernetic or feedback	Computer
4	Basic throughput or self-maintaining system	Amoeba
5	Genetic-societal or plant	All types of plants

¹ Dr. L. Moore, Faculty of Commerce and Business Administration, The University of British Columbia, in a currently unpublished article, "The Systems Concept; A Key to Organizational Effectiveness," April 8, 1966.

² The synergistic aspect of systems is felt to be highly important to this paper since, as will be developed in Chapter IV, the effect of a channel system must be more than the effects of the individual agencies taken separately, otherwise there would appear to be no reason for these agencies to work together. One of the synergistic effects may be, among others, the creation of profits. These points are discussed on pages 31 to 37 inclusive.

³ Boulding, K.E., "General Systems Theory--The Skeleton of a Science," Management Science, Vol. 2, No. 3, April, 1956, pp. 202-205.

⁴ The concept of levels of systems is further developed on page 15.

<u>Level</u>	<u>Brief Description</u>	<u>Example</u>
6	Animal level (greatly increased mobility and specialized perceptive devices such as eyes and ears)	Animals, not including humans
7	Human (capable of reasoning in past, present, and future; capable of imagery)	Human beings
8	Social organizations	Corporations, military, government, other institutions
9	Transcendental systems	Universe

Having given a basic definition and classification of systems, the writer proposes that a more specialized definition is felt to be necessary because systems in marketing are of interest in this paper and it appears reasonable to assume that these systems exist on four levels: the mechanical, the cybernetic, the self-maintaining, and the social organizational systems.⁵

Thus, the definition employed in this paper is as follows:

"System" is specifically held to mean an ongoing process of related activities or tangible and intangible objects in motion, in process, or in a state of change.

In addition, to permit the system definition to become more applicable to business, the writer includes a basic objective of systems in business is to make possible, either directly or indirectly, attainment of the goals of business.

⁵ Refer page 21.

This addition was felt to be necessary to allow establishment of a criterion that could be employed in appraising systems and their applicability to marketing channels of distribution.⁶

Peculiar to the above very brief definition of system, and to some other definitions that will follow, is the necessity to present the definitions without elaboration. Where necessary, footnotes will be included to indicate for the reader where he might obtain clarification and amplification in other parts of this survey. The practice of presenting the definition before discussing the subject was required to permit the needed communication of the meanings the writer attaches to key concepts. The reader should realize, however, that the literature resembles a muddled conglomeration of meanings for most concepts connected with, or related to, systems. Caution should be exercised in reading this survey since the definitions presented in it have been compiled from surveying the literature but do not represent a consensus.

Some other basic definitions are required before proceeding further:

1. Marketing channels of distribution are sequences of agencies and activities through which products flow in the mutual attainment of customer satisfaction and business

⁶ The writer considers marketing to possess subgoals that fit within the broader set of goals employed by business in general. The definition of system is elaborated upon in pages 21, 25, 26, and 32.

objectives⁷ (e.g. the arrangement of warehouses and dealerships serves as a partial channel for the distribution of automobiles).

2. A systems approach is an approach used when considering a group of activities or objects in an attempt to determine if the activities are related. Thus, one is attempting to determine whether the systems concept might apply.⁸
3. "Process" is a sequence of events leading toward some goal. Thus, the term "process" may also be used interchangeably with the term "activity" when interaction between the components of systems is what is meant by "activity." A process, however, is a kind of subsystem in that it is a system without the feedback-control component.⁹

C. RESEARCH QUESTION AND RESEARCH OBJECTIVE

The research question with which this survey will deal is:

⁷ Marketing channels of distribution are defined and discussed in more detail in Chapter III, particularly pages 78 to 87 inclusive.

⁸ Pp. 23 ff.

⁹ Pp. 44-62 inclusive.

How is the term "system" employed in the marketing literature dealing with channels of distribution?

The approach taken to deal with the research question involves consideration of marketing distribution channels on various systems levels. If channels may be broken down into groups of activities, then each group is held to be a system level. The very broad definition of marketing channels of distribution involving different levels of systems is utilized so that a wider framework may be evaluated.

The objective of this paper becomes, then, to present an exploratory survey that will permit a general evaluation of some of the more pertinent writings dealing with the term "system" as applied to marketing channels of distribution.

The above objective involves consideration of four subobjectives:

1. To determine how the term "system" is used in the marketing literature dealing with channels of distribution.
2. To evaluate and criticize the usage of the "systems" term, and related concepts, as employed by a sample of marketing writers.
3. To present a framework for appraising the marketing literature dealing with channels of distribution, as systems, by organizing the framework around the classes of components of systems--inputs, processes, outputs, feedback-control, and restrictions.

4. To present some summaries and conclusions for each classification of components of systems, and for the more general framework, so that a study of greater detail may be attempted by other investigators.

These four subobjectives are chosen as constraints on the survey in order to keep the survey oriented toward the main objective. The first two subobjectives are self-explanatory and involve the basic issues with which this survey will deal. That is, definition, evaluation, and criticism are necessary steps in exploring the meaning and uses of the term "system" and its related concepts. The third subobjective employs the components of systems as the basic factors upon which a survey of the meaning and use of the system concept may be built.¹⁰ The last subobjective makes explicit the need to establish a general framework so that analysis, appraisal, and criticism of this survey and other writings dealing with systems in marketing may be facilitated.

D. REASONS FOR MAKING THE SURVEY

The main reason that prompted the writer to make this survey was the ubiquitousness of the term "system" in the

¹⁰ The classes of components of systems are defined and discussed on page 44.

marketing literature. The definition of the term seems to vary from writer to writer. If possible, a consistent meaning and usage of the term would seem to be warranted in order to establish some consensus.

On the surface, it would appear that the application of systems and related concepts to marketing would greatly aid understanding and serve as an integrating framework for building marketing theory.¹¹ Certainly a statement such as Boulding makes is very tempting to induce one to support the systems concept when he states:

General Systems Theory is the skeleton of science in the sense that it aims to provide a framework or structure of systems on which to hang the flesh and blood of particular disciplines and particular subject matters in an orderly and coherent corpus of knowledge. 12

The difficulty inherent in making operational such statements as Boulding's lies in determining just what is meant by the systems concept. Some definition and clarification is necessary. After some preliminary surveying of the topic of systems, the writer found that the meaning of the systems term was defined in anything but a uniform manner. The necessity to define and evaluate some of the literature, even on a brief survey basis, is felt to be a contribution.

¹¹ For an excellent discussion of systems in marketing see Fisk, G., "The General Systems Approach to the Study of Marketing," The Social Responsibilities of Marketing, W.D. Stevens (ed.), The American Marketing Association, Ann Arbor, Michigan, 1962.

¹² Boulding, K.E., "General Systems Theory--A Skeleton of Science," Management Science, II, 3 (April, 1956), p. 208.

A third reason involves the fact that more and more literature is becoming available to help marketing management understand the marketing processes of the firm. Much of this literature is using the concept of systems. The writer feels that in order to understand some of the new systems literature in marketing the reasoning behind the systems concept should be examined. Thus, the environment for systems in marketing could be structured somewhat so that the levels of systems activities could be related.

E. LIMITATIONS OF THE SURVEY

The most severe limitation on this survey is the fact that it must be exploratory in nature. The scope of the topic is very difficult to delineate. Consequently, one might expect an unstructured, unorganized sort of rambling discourse in a survey of this kind. It is true the literature dealing with systems is just now beginning to evolve and some organization and some central concepts are beginning to appear. But it is not true that something meaningful cannot be done in view of the current state of the literature. At least some more positive approach can be made to attempt to delineate and understand some aspects of the literature. The success of such a venture remains, however, a point that can be debated.

A second limitation, closely connected with the first, is the necessity to present an abstract of the concept of systems (as found in Chapter II) that does not consider conflicting points of view nor attempt to defend this writer's concept of the meaning of systems. In view of the first limitation, this highly personal content should be expected. An exploratory survey of the limited scope outlined in this paper can scarcely do little else than admit that such omissions weaken the value of the study. However, this point will not be resolved. The quality of the original investigation that aided the writer in constructing his personal opinions regarding the meaning of systems does somewhat reduce part of the error. Any errors and omissions are, of course, recognized by the writer and held as his responsibility.

A third important weakness lies in the incompleteness of the treatment of the systems topic as found throughout the marketing literature.¹³ Clearly, this is a limitation that this survey will attempt in some small way to help overcome.

F. ORGANIZATION OF THE THESIS

Some difficulties may be anticipated unless the reader is careful to follow the organization of this survey.

¹³ As discussed in Fisk, op. cit., p. 210.

While it is the stated intention of the thesis to examine the usage of systems terminology in the marketing literature dealing with channels of distribution, some intermediate steps are required to make such an examination.

In Chapter II an abstract of the concept of system is presented. In this chapter the writer attempts to describe his understanding of the nature of systems and the systems literature. The abstract is required in order to permit evaluation of the marketing literature dealing with systems in later chapters.

In Chapter III the concept of systems in marketing will be examined and clarified. This chapter serves to provide a broad framework within which marketing channels of distribution may be related. In addition, Chapter III helps to provide a transition from a very general abstract of systems to an extremely particular treatment of aspects of the systems concept as applied in the literature dealing with channels of distribution.

Chapter IV gets into the detailed treatment of examining the usage of systems terminology as applied to the literature dealing with channels of distribution. Specifically, the meaning of channels as systems is examined as are the characteristics of marketing channel systems and models of channel systems.

Chapter V deals with determining how the process component of systems is employed in the literature involving channels. The process component of marketing in general is examined and specific applications to channels are made.

In Chapter VI the input and output components of systems are examined in their usage in channels literature. A broad framework from the discipline of economics is developed in dealing with channel inputs and outputs. Then, the focus is placed on the marketing literature and how it deals with channel inputs and outputs.

In the last chapter, the role that the systems concept plays in marketing channels literature is assessed and some conclusions and hypotheses for further investigation are presented.

CHAPTER II

AN ABSTRACT OF THE CONCEPT OF SYSTEMS AND ITS ROLE IN BUSINESS THEORY FORMULATION

A. TOWARDS CLARIFYING THE CONCEPTS OF THE SYSTEMS APPROACH AND SYSTEMS

The concept of the systems approach appears to have a variety of meanings, or at least to be interpreted in a number of ways. The systems approach is an administrative technique for understanding company organizations, a control technique for managing production processes, and a conceptual device to structure and facilitate management problem solving, in addition to a number of other meanings.

The same tendency toward a variety of meanings applies to systems. The concept is widely but loosely used and it becomes a difficult task to try to explain its meaning. Yet, there appear to be some useful and workable elements in the concept and there seems to be some consensus as to the components and uses of the term.

In the chapter presented here an attempt will be made to define and discuss some of the more useful and applicable con-

cepts related to systems and an endeavour will be made to evaluate some of these concepts.

B. THE STRUCTURE OF SYSTEMS LEVELS

In the first chapter the concept of system was generally defined to mean a group or collection of interrelated and interdependent components or activities often synergistic in nature.¹ In order to show how the various types of systems that will be discussed later in this chapter² are related, it is necessary to develop the concept of the structure of systems levels.

Kenneth E. Boulding has developed a classification of systems levels.³ As was shown in the table on page 3, these levels are the static, mechanical, or clockwork, cybernetic or feedback, basic throughput or self-maintaining, genetic-societal, animal, human, social organization, and transcendental. Each of these levels, in ascending order from the static, are differentiated on the basis of complexity. Thus, one may attain in

¹ P. 3. Synergistic, the reader will recall, refers to the effect of the total system being greater than the sum of the effects of the parts taken individually. See p. 96.

² Pp. 21 and 48-62.

³ Boulding, op. cit., p. 203.

each succeeding higher level of system complexity a number of systems which appear at the lower level of the scale. As Dr. Moore points out⁴ in one of his examples, the thermostatic furnace, a cybernetic or feedback system, is made up of a number of static and mechanical devices.

Let us review briefly Dr. Boulding's schema of systems levels. The static level of system complexity Boulding calls the level of frameworks. The accurate description of these frameworks is the beginning of organized theoretical knowledge in almost any field, for without accuracy in the description of static relationships no accurate functional or dynamic theory is possible. Thus, the Copernican revolution was really the discovery of a new static framework for the solar system which permitted a simpler description of its dynamics.

The next level of systematic analysis is that of the simple dynamic system with predetermined necessary motions. As Boulding says, this might be called the level of clockworks.⁵

The next level, closely related to the preceding one, is that of the control mechanism or cybernetic system. This differs from the simple stable equilibrium system mainly in the fact that the transmission and interpretation of information is an essential part of the system. As a result of this, the equilibrium position is not merely determined by the equations

⁴ Dr. L. Moore, "The Systems Concept--A Key to Organizational Effectiveness," currently unpublished article, April, 1966, p. 2.

⁵ Boulding, op. cit., p. 202.

of the system, but also the system will move to the maintenance of any given equilibrium, within limits. Thus, the thermostat will maintain any temperature at which it can be set, the equilibrium temperature of the system is not determined solely by its equations. The trick here, of course, is that the essential variable of the dynamic system is the difference between an "observed" or "recorded" value of the maintained variable and its "ideal" value. If this difference is not zero, the system moves to diminish it; thus, the furnace sends up heat when the temperature as recorded is "too cold" and is turned off when the recorded temperature is "too hot."

The fourth level is that of the self-maintaining structure. This is the level at which life begins to differentiate itself from non-life; it might be called the level of the cell. However, molecular systems maintain themselves in the midst of a throughput of atoms. In spite of this factor though, as we pass up the scale of complexity of organization towards living systems, the property of self-maintenance of the structure in the midst of a throughput of material becomes of dominant importance. Closely connected to the property of self-maintenance is the property of self-reproduction. It may be that self-production is a more primitive or "lower level" system than the self-maintaining but it is not important at what point in the scale of increasing complexity "life" begins. What is clear, however, is that by the time we have got to systems which both reproduce themselves and maintain themselves in the midst of a

throughput of material and energy, we have something to which, Boulding states, it would be hard to deny the title of "life."

The fifth level might be called the genetic-societal; it is typified by the plant and it dominates the empirical world of the botanist. The outstanding characteristics of these systems are a division of labour among cells to form a cell society with differentiated and mutually dependent parts (roots, leaves, etc.) and a sharp differentiation between the genotype and the phenotype which are associated with the phenomenon of "blue-printed" growth. At this level there are no highly specialized sense organs and information receptors are diffuse and incapable of much throughput of information.

As we pass upward from the plant world towards the animal kingdom, we gradually pass into a new level, the animal level, characterized by increased mobility, teleological behaviour, and self awareness. Here we have the development of specialized information receptors (eyes, ears, etc.) leading to an enormous increase in the intake of information; we also have a great development of the nervous system, leading ultimately to the brain, as an organizer of the information intake into a knowledge structure. Increasingly, as we ascend the scale of animal life, behaviour is response not to a specific stimulus but to a knowledge structure or view of the environment as a whole.

The next level is the human level; that is, of the individual human being considered as a system. In addition to all, or nearly all, of the characteristics of animal systems,

man possesses self consciousness, which is something different from awareness. His knowledge structure, besides being much more complex than that even of the higher animals, has a self-reflexive quality--he not only knows, but he knows that he knows. This property is probably bound up with the phenomenon of language and symbolism. It is the capacity for speech--the ability to produce, absorb, and interpret symbols, as opposed to mere signs like the warning cry of an animal--which clearly separates man from animal. Man is distinguished from the animals also by a much more elaborate image of time and relationship; man is probably the only organization that knows that it dies, that contemplates in its behaviour a whole life span and more than a life span. Man exists not only in time and space but in history, and his behaviour is profoundly affected by his view of the time process in which he stands.

On the eighth level of system complexity, because of the vital importance for the individual man of symbolic images and behaviour based on them, it is not easy to separate clearly the level of the individual human organism from the next level, that of social organizations. Man is not isolated from his fellows. So essential is the symbolic image in human behaviour that one suspects that a truly isolated man would not be "human" in the usually accepted sense, though he would be human. Nevertheless, it is convenient for some purposes to distinguish the individual human as a system from the social systems that surround him, and in this sense social organizations may

be said to constitute another level of organization. The unit of such systems is not perhaps the person--the individual human as such--but the "role"--that part of the person which is concerned with the organization or situation in question, and it is tempting to define social organizations, or almost any social system, as a set of roles tied together with channels of communication. The interrelations of the role and the person, however, can never be completely neglected. At the level of social organizations we must concern ourselves with the content and meaning of messages, the nature and dimensions of value systems, the transcription of images into an historical record, the subtle symbolizations of art, music, and poetry, and the complex gamut of human emotion. The empirical universe here is human life and society in all its complexity and richness.

To complete the structure of systems, Boulding states that we should add a final turret for transcendental systems, even if we may be accused at this point of having built Babel to the clouds. There are, however, the ultimates and absolutes and the inescapable unknowables, and they also exhibit systematic structure and relationship. It will be a sad day for man when no one is allowed to ask questions that do not have any answers.⁶

⁶ The concept of different types of systems is expanded upon pages 48 to 56 inclusive.

C. A SPECIALIZED DEFINITION OF SYSTEM

Marketing cannot be considered involved in all nine levels of systems complexity. Rather, only mechanical, cybernetic, basic throughput, and social organization systems apply to marketing with the other systems existing within the same environment in which marketing exists.⁷ Perhaps these other systems support marketing.

Mechanical systems are felt to be involved in marketing since, by their nature, they involve transporting, storing, sorting, grading, and facilitating the marketing processes and flows.⁸ Cybernetic systems are involved in controlling marketing, in providing marketing information, and in the marketing flows.⁹ Self-maintaining systems are involved in marketing since self-maintenance implies survival. As is widely held, one of the goals of business is to survive. Finally, social organization systems are involved in marketing since institutions are present.¹⁰

⁷ The environment marketing exists within is dealt in "Interdisciplinary Contributions to Marketing Management," Lazer, W. and Kelley, E.J., Marketing and Transportation Paper No. 5, The University of Michigan, Ann Arbour, Michigan, 1962.

⁸ These topics are expanded upon in this paper, pages 56 and 108 to 127 inclusive.

⁹ These topics are discussed in this paper, pages 48, 58-62, 96, and in Chapters V and VI.

¹⁰ Duddy, E.A. and Revzan, D.A., Marketing: An Institutional Approach, 2nd edition, McGraw-Hill Inc., New York, N.Y. 1953, Chapter 2.

Thus, the general systems definition is somewhat broad. In order to be more specific and to permit a more meaningful application to the systems involved in marketing, a specialized systems definition is proposed for use in a marketing sense since it is postulated that channels of distribution involve four levels of systems complexity (p. 21).

"System" is specifically held to mean an ongoing process of related activities or tangible and intangible objects in motion, in process, or in a state of change.

Implicit in the definition are a number of points requiring elaboration.

1. Systems are dynamic and involve ongoing processes¹¹ since the static system was not included in consideration for this paper.
2. Activities are involved in systems since social organization systems cannot involve just mechanical process and objects.¹²
3. Objects involved in systems may be tangible or intangible in the sense of being real, concrete, or objectively observable. Intangible objects may be concepts, subjective, ill-defined, and nebulous. Examples are found in tangible materials involved in a production process

¹¹ The process definition is given in this paper, pages 6, 48, and 61.

¹² Boulding, op. cit., p. 204.

or the intangible addition of utility to that material as it moves through the process.

4. Physical motion is not necessary. Thus, the flow of words in a conversation is ongoing but non-physical in the sense of being observable directly. In addition, direction need not be specified. Hence, flows may be two-way or multidirectional. But always something must be going on.
5. As indicated earlier (p. 5), a basic objective of systems to be considered in this paper must help make possible the attainment of the goals of business.¹³

D. DEFINITION AND DESCRIPTION: THE SYSTEMS APPROACH

1. Definition: The Systems Approach

The systems approach is defined as that approach in which a group of activities or objects is considered in determining if and how the activities and/or objects are related. Thus, the systems approach involves attempting to determine whether the concept of system might apply to the observed phenomena.

¹³ The general systems literature does not specify that only business goals are involved in systems. As implied, business goals are explicitly included in this survey in the interest of brevity and to narrow the scope of the topic.

The definition of the systems approach involves four necessary elements:

- a. Formal examination may be involved and, hence, examination is not random but systematic. Formal examination refers to the method of the analysis.
- b. The meaning and characteristics of systems must be known in order to make the examination of the observed phenomena.
- c. Evaluation of alternative system designs is involved when one attempts to describe the relationships between observed phenomena. Problem solving or management decision making is not implied. Rather, the method deals with an evaluation of alternative concepts of systems and explanations of them.
- d. Examination also involves consideration of a group of activities or objects that might not be inter-related. The observer does not, however, know that an interrelationship does not exist until he has made the necessary examination.

For systems of a complex nature, the systems approach works toward providing an objective method of examining the nature and characteristics of the concepts involved. The systems approach draws on ideas and principles derived from a knowledge of what systems are and how they operate. The essence of a systems approach is that it can be explained and experimentally repeated. Therefore, the method is essentially heuristic but

in the context of systems analysis, is supported by systems concepts and a methodology.

2. The Relevance of the Systems Approach for Business

The relevance of the systems approach for business lies in the fact that conceptualization of a business organization may be facilitated through thinking of a concept of interrelated systems. Necessarily, this thinking involves consideration of feedback-control since it is feedback-control which allows the businessman to monitor the state of the system. (p. 58). Feedback-control occurs when an output is compared to a standard or criterion in order to maintain or improve business processes.

It may be said that business processes may be either man-dominated in the sense of determining who, or what, controls the process. Most frequently, business processes are described as man-machine processes because both components are directed toward the achievement of specific tasks. The necessary precondition to considering systems with feedback-control is to structure the total system. Using this orientation, the investigator assumes that the complex phenomena of business are essentially simple phenomena with multiple feedback relationships.

3. The Relevant Components in the Analysis of Systems

The American Systems Association, a body of professional systems analysts, has devoted a large amount of time to

the determination of a consensus as to the components of systems analysis. The great drawback in the ASA approach is that it tends to be somewhat narrowly defined and highly specialized in application. However, certain elements appear in the literature of the ASA to indicate that the following components might serve as useful to understanding the systems approach as applied to marketing:

- a. Object, input, process, output, feedback-control, and restrictions are particular classes of components in systems.
- b. Special emphasis might be placed on the process and feedback-control elements as major and essential components of systems.
- c. All systems and their alternatives to be considered are discussed in terms of systems design.
- d. A major objective of the systems approach is to structure concepts to facilitate understanding them.
- e. A general definition of systems must employ the concept of ongoing processes and must involve furthering the objectives of business.

E. THE ROLE OF THE SYSTEMS APPROACH IN CONCEPTUALIZATION OF BUSINESS SYSTEMS

Serious questions regarding the relevance of general theories in business have been raised from time to time. Skeptics sometimes hold that business is unsuited to the scientific method. That is, of course, a common complaint found not only amongst skeptics. That business is conducted in a different environment than scientific research is true; that business problems are more ill-defined than scientific problems may also be true; that business is not susceptible to analysis by science-oriented methods is not necessarily true. It is irrelevant that the method be termed "scientific" since the line between the exact and inexact sciences is difficult to draw. Given the capability of abstraction and generalization, differences between sciences become differences of degree. That is, if reasoning is without logic, if terms are ambiguous, if decisions are intuitive, and if the requirements are for looseness rather than exactness, the difference between "sciences" become differences in kind. However, the latter requirements do not characterize business as its decision-makers intend to conduct it. Businesses conducted in such a loose fashion either pass from the scene or are overhauled for what Grether might call survival.¹⁴

¹⁴ The concept of survival is widely found in management literature. E.T. Grether discusses the topic in "An Emerging Apologetic of Managerialism?: Theory in Marketing, 1965," Journal of Marketing Research, May, 1965.

Since the scientific method does exist, perhaps imperfectly so, in business one may utilize Handy and Kurtz's chart. These writers attempt to demonstrate the general place of systems in business theory and present the following, arranged not in order but in context with other fields:¹⁵

The Older Fields

Anthropology	Political Science
Sociology	Jurisprudence
History	Psychology
Economics	Education

The Newer Fields

Communication Theory	
Information Theory	Linguistics
Cybernetics	Sign-behaviour
Preferential Behaviour	
Game Theory	Value Inquiry
Decision-making Theory	General Systems Theory

Within the general framework that Handy and Kurtz provide it is possible to narrow the focus back down to systems in business. The success of the systems approach and the validity of its applications are influenced by the ability of the theorist to represent the real world in symbolic form. However,

¹⁵ Handy, R. and Kurtz, H., "Introduction and Some General Comments on Behavioral Research," A Current Appraisal of the Behavioral Sciences, Behavioral Research Council, Great Barrington, Mass., 1963, Section I.

generalization of evaluative methods does not imply that there are universal methods at the disposal of the systems theorist and analyst. Since the reiteration of alternatives is an intrinsic part of the method, the method is heuristic. Trial and error persist but in a more formal environment. The method of the systems approach is to anchor the critical elements of analysis in appropriate relationships to the systems concept being analyzed. This "arms" the theorizer, a priori, with an understanding of how to derive consistent solutions.¹⁶ Thus, in systems that are inherently ill-structured, as may be found in most areas of business (e.g. consumer behaviour, priority of needs and wants, the factor of uncertainty, random fluctuations in price movements of securities, etc.), the method provides a set of components to assist the structuring process.

Ideally, the systems theorist moves from the real world to various symbolic tools to analyze what is observed. The goal is not to lose detail or completeness in translation, nor to misrepresent. In a methodologically-oriented effort, the systems theorist would move between a representation of the concept created by the symbolic tools to the real world in a repetitive looping process.¹⁷

¹⁶ Optner, S.L., Systems Analysis for Business and Industrial Problem Solving, Prentice-Hall Inc., Englewood Cliffs, New Jersey, 1965, p. 6.

¹⁷ Ibid., p. 8.

1. Definition and Description: Understanding Systems Concepts Through the Systems Approach

Systems are maintained or improved through the introduction of changes that utilize resources (e.g. perhaps in marketing through the marketing mix) more effectively. Effectiveness of resource utilization may be measured by:¹⁸

- a. Increase or decrease in resource requirement without a corresponding change in volume, cost, and/or profit.
- b. Increase or decrease in exposure to risk.
- c. Change in relative value between resources measured by some criteria.

The systems approach is particularly well adapted for large-scale, complex systems. These concepts are intrinsically difficult and may be composed of both quantitative and qualitative elements. Further, it is not necessary that a precise level of success in conceptualization be specified, nor that a comparable system be in existence at the outset. It is not even essential that the concept be fully understood or completely articulated. It is the task of the systems analyst to supply the missing elements and to structure the incompletely-stated system, the alternatives, and the solutions. The analyst may identify the system under study in a manner different from that in which it was originally posed.

¹⁸ Ibid., p. 3.

The goal in evaluating systems concepts may be stated as being to bring as much precision as is inherent in the concept to its analysis and evaluation. However, Fisher states that there are four constraints upon the examination of business concepts:¹⁹

- a. The examination must contain the elements of a methodology (i.e. provide principles of procedure).
- b. Procedures must be internally consistent.
- c. Procedures must be applicable to simple or to complex ideas.
- d. Procedures must be capable of aggregating or separating elements of ideas.

If an analogy to problem solving may be permitted,

Polya contended that:

Irrespective of the magnitude or complexity of business problems, the goal is to improve the existing techniques by which they are assessed, solved, and subsequently implemented. A problem solving methodology provides an additional means of introducing objectivity into the business analysis. Objectivity and rationality in problem solving become the major focal points. Objectivity is the primary requisite of observation. Rationality is defined as a thought process entailing logical reasoning. A body of knowledge widely confirmed by observation becomes evidence. Observation is the process by which data are identified with a system for subsequent explanation of that system. Explanation is defined as the logical derivation of a statement from a number of

¹⁹ Fisher, R.A., The Design of Experiments, Hafner Publishing Co., New York, N.Y., 1951, p. 76.

of well established facts. The process of explanation must be rational. . . . 20

The applicability of the above statement to evaluation of systems concepts would appear to be high.

The need to secure profit is responsible for the existence of a rational motive in business. As Dent contends,²¹ less profitable companies are not directed irrationally. It is not claimed either that very profitable companies are managed in a completely rational fashion. Use of the term is intended to convey only that the pursuit of profit is in itself disciplinary. Profit making tends to reject intentionally irrational acts. In a successful business, the majority of decisions cannot be contrary to reason, or illogical, if it is to survive. Therefore, concepts applied to further understanding of business systems must meet a similar set of criteria.

2. Business as a System: The Reasons For

It would appear that business may be viewed as a system.²² In defense of this concept might be offered the following reasons:

²⁰ Polya, G., How to Solve It, Doubleday and Co. Inc., Garden City, N.Y., 1957, p. 43.

²¹ Dent, J.K., "Organizational Correlates of the Goals of Business Managements," Issues in Business and Society, William T. Greenwood (ed.), Houghton Mifflin Co., Boston, Mass., 1964, p. 385.

²² Business has been viewed by many theorists as a system. Treatments by Duddy and Revzan, op. cit., and others all deal with the systems approach.

a. Systems concepts make it possible to extract both the general and the special properties of an area to be understood. It is felt that the business manager does not usually employ the idea of a system in his particular area of enterprise. Under most circumstances he treats solutions to problems as special cases that are peculiar to his firm. In fact, it might be contended that the individual manager appears to be dominated by a microscopic view of the contributing factors, the particular approach (i.e. functional versus managerial) and the particular theorist (e.g. in marketing, Alderson or Revzan or Grether etc.) most influential on his way of thinking. Thus, some factors may tend not to be related to the whole. Systems not only facilitate problem solving but also go one step further and permit conceptualization of whole areas of business activities. Thus, hypothesis formulation is possible.

b. Solutions in the business environment tend to be "final outcome oriented."²³ Final outcome solutions are defined as those in which problem solving is pointed at end results without respect to immediate

²³ Newell, A., Shaw, J.C., and Simon, H.A., Report on a General Problem Solving Program, The RAND Corp., Santa Monica, California, 1959, p. 1584.

outcomes and alternatives. Opposed to the final outcome orientation are solutions characterized as process solutions. The process orientation conceives of the problem as intrinsically complex, irrespective of its apparent simplicity. The process orientation would require that a problem be divided into its component, serially-related parts (e.g. in marketing, a channel of distribution problem).

The argument for a final outcome orientation to problems is justified by the circumstances under which many decisions are made--managers make frequent decisions on demand. Because they require more time, process solutions tend to be restricted to problems not requiring demand solutions. Hitch states:

The process solution requires a formal study effort, higher cost, and more time than the final outcome solution. It therefore has its greatest value in addressing the large-scale, complex problems where the stakes are high and management is willing to invest in a carefully-derived conclusion. 24

A final reason to adopt the process solution: a solution is composed of many parts, some having precedence over the others in order of their necessary priority. The situation must be understood in terms

²⁴ Hitch, C.J., On the Choice of Objectives in Systems Studies, The RAND Corp., Santa Monica, California, 1960, p. 1955.

of its detailed processes in order to employ the components of a solution, properly related to avoid logical inconsistency.

Systems provide a framework within which process solutions may be integrated.

- c. "Systems may provide the objective standard by which problems can be organized for solution."²⁵ An objective standard may be defined as a nonsubjective means of stating what a relationship should be, in terms of authoritative criteria embodying specific rules or principles. From objective standards it may be possible to gain greater insight to generalize on business phenomena.

Without the ability to generalize, business operations become a divergent set of inputs, processes, and outputs, never twice the same. The general situation which Churchman spoke of,²⁶ a chaos of causes, results, coincidences, accidents, and successful or unsuccessful outcomes might hold. The idea of a system is addressed, as Hitch states,²⁷ not to an individual phenomenon, but to the total pattern of

²⁵ Ibid.

²⁶ Churchman, C.W., "Marketing Theory as Marketing Management," Cox, R., Alderson, W., and Shapiro, S.J. (eds.), Theory in Marketing, R.D. Irwin Inc., Homewood, Illinois, 1964, p. 313.

²⁷ Hitch, loc. cit.

phenomena that create an environment and a state of being for a given process.

- d. A large number of concepts in business may be placed in a quantitative-qualitative state. Quantitative concepts describe conditions wherein there are solutions obtained by manipulating numbers in predetermined ways (e.g. cost of distributing a given volume of a specific product between two alternative marketing channel agencies). Qualitative concepts are non-numerical and are concerned with the specification of future or poorly-defined resources and their attributes or characteristics. As systems concepts with both quantitative and qualitative aspects become better understood, the quantitative attributes are more easily fixed and precise quantitative solutions become more likely.²⁸ For those areas that do not emerge readily from the qualitative state (e.g. consumer behaviour, brand content, preferences, etc.) quantitative methods have limited use. Hence, other methods must be introduced to deal with the qualitative systems rationally. Systems with both qualitative and quantitative characteristics can be called mixed problems.²⁹

²⁸ Newell, et al., op. cit.

²⁹ Ibid.

The systems approach and the concept of system provides a framework within which topics of business action may be categorized. The approach taken of considering levels of system complexity ignores the managerial problem solving approach but provides a conceptual framework which serves to facilitate understanding of the place of the particular enterprise in the total systems environment. Thus, in this view of a larger environment, problem solving is seen to be limited by the nature of the total environment. For example, a wholesaler is a specialized channel middleman. As such, the wholesaler can exert little pressure on final consumers to demand that his services be utilized in the handling of the products those consumers desire. Such an occurrence is absurd by definition.

3. Purpose: The Systems Approach

The purpose of a systems approach is to provide a useful structure for evaluating difficult concepts. Further, an evaluative methodology for business systems must do these things:³⁰

- a. Prescribe a method that functionally organizes a general evaluative process.

³⁰ Optner, op. cit., p. 10.

- b. Stipulate the steps that should be taken to provide the format necessary for evaluation of hypotheses concerning systems.
- c. Describe systems models and capabilities that provide the means for the iteration of alternative outputs in the evaluative process.³¹

This general discussion does not imply the experimental method although the method has a role to play. Some have gone so far as to state:

There are few places where experimentation is acceptable in the business world. . . research is seldom "pure" but very much applied. This may explain why business produces relatively few "philosophers of business." In day-to-day business problems, there can be no doubts about the nature of the world. In longer-range problems, if details are incomplete or if too many alternatives exist, there may be less certainty. In this latter area, a philosophy of problem solving is as yet unstated for even a limited class of problems. 32

Business may be viewed as open-ended since there is a need to accept and evaluate a variety of random factors that may not be usable and, therefore, not enhance the value of the firm, in order to operate in a chosen environment (e.g. not all changes in the market affect a particular firm or a particular market variable). Thus, in light of these two problems, it would

³¹ Hitch, op. cit.

³² Helmer, O. and Rescher, N., On the Epistemology of the Inexact Sciences, The RAND Corp., Santa Monica, California, 1958, p. 1513.

appear that there is a place for a scientifically oriented, general purpose, evaluative methodology. Given the incompletely structured, open-ended world of business, the task is to explore the possibility of improving performance in evaluation of business systems.

4. Definitions and Methodology: Ill-Structured Business Systems

Some definitions might be presented here before proceeding further:

- a. Method: A method is founded on the tradition of independent investigation. The stimulus for investigation is the individual's experience or familiarity with the topic area.
- b. Solution: A solution is defined as the means of closing the gap between an existing situation as observed or inferred and a proposed situation. It must be conclusive and demonstrable.
- c. Conclusion: A conclusion is defined as an inference drawn from two or more propositions that are taken as a premise.
- d. Heuristic Method: The heuristic method does not require formal problem definition nor abstraction although such steps often facilitate obtaining solutions. However, under the heuristic method, no demands need exist for demonstrating unambiguously

how a conclusion was reached. Further, the solution might not be optional since the student may not be able to determine if he has optimized the solution.

From the above four definitions it is possible to discuss ill-structured systems. Particular emphasis is given to this topic since it so largely represents the current state of business theory.

One of the tasks in applying a methodology to evaluating systems is to identify the valuable, useful elements of what is considered a largely heuristic process (e.g. perhaps marketing managers learn through trial and error more than through intuition or systematic calculation³³). A second task is to propose ways of identifying the high risk, low payoff potentials, implicit in any potential course of business actions. There is no implication, however, that any of the inventive, ingenious conclusions that may grow out of heuristic hypothesis formulation will be lost. The task, in short, is to bring structure to an ill-structured process.

The ill-structured system has another important characteristic: it attempts to deal with value systems of different orders in arriving at a single solution. One such system may deal with time (e.g. distribution lead times); a second, with cost (e.g. pricing); a third, with effectiveness (e.g. the total

³³ Alderson discusses the stages in decision making in Chapter 14 of Marketing Behaviour and Executive Action, R.D. Irwin Inc., Homewood, Illinois, 1957.

marketing mix). In each of these three categories there may be quantifiable and non-quantifiable elements. In each category there may be equipment, processes, human and other subcategories, each presented with varying degrees of completeness.

Some skeletal requirements to bring structure into structured process might be suggested as:³⁴

- a. The process might be flow-charted, showing the principal action points.
- b. Details of the principal process steps must be described.
- c. The principal alternatives and how they were generated must be demonstrable.
- d. The assumptions pertinent to each alternative must be identified.
- e. The criteria by which each alternative will be judged must be fully stated.
- f. Detailed presentation of data, data relationships, and the procedural steps by which data were evaluated must be part of any solution.
- g. The major alternative solutions and details to explain why other hypotheses were eliminated must be shown.

³⁴ Newell, A., Shaw, J.C., and Simon, H.A., Elements of a Theory of Human Problem Solving, The RAND Corp., Santa Monica, California, 1959, p. 144.

In this study the preceding requirements are not equal in importance, in precision of expression, or in degree of completeness and objectivity with which they can be expressed. In a given situation each requirement might assume a unique importance. Further, it is not assumed that each step will be fully workable in application to poorly structured systems. Rather, the steps are a useful framework for approaching systems and might apply on more than one level of system complexity. Finally, none of these steps would necessarily imply quantifiable relationships.

There are two major problems in attempting to bring structure to ill-structured systems concepts. First, the form in which the requirements of ill-structured systems are communicated complicates structuring. The act of writing and documentation of investigation and reporting of results sometimes would have the effect of forcing structure into a system. Verbosity, semantics, sentence structure, completeness in presentation, accuracy of research, thoroughness of data gathering, research methods used, bias of the researcher and of the respondents add further complications.

The second problem in attempting to structure ill-structured systems or systems concepts involves difficulties with data. Numbers and information are data which in turn may be considered to be results. Thus, data are not a phenomenon but serve to describe a phenomenon. Explanation of a phenomenon must mean that data be related, numerically if possible, to other data.

The use of data as factual evidence of a phenomenon, or as a result of a phenomenon has a number of major pitfalls. First, it may be difficult to interpret what the data mean. Second, problems emerging from a misunderstanding of data relationships could result in errors in scaling, in exaggerating the influence of one attribute over another, and finally, in selecting data to describe a phenomenon. Weiner states:

Understanding data and data relationships has its first test when the analyst investigates a problem. The second test takes place when the analyst uses the data to analyze a problem. The third test takes place when he draws conclusions from the data and data relationships. The fourth test occurs when the data is formally presented as an explanation of a problem or as a solution. The ultimate test is the conclusiveness of the explanation. This, in turn, rests upon the ability to: (1) demonstrate an outcome in advance of an occurrence; or (2) to predict an outcome that is not demonstrable, but that does, in fact, occur. 35

A third pitfall is related to the structure of the system. The use of data must be made clear: do the data explain the phenomenon or does the phenomenon explain the data? Business contains a great deal of "raw" data--much uncatalogued, unqualified, unorganized value sets resulting from a process (e.g. buying behaviour). The systems theorist (analyst) needs to analyze and resynthesize raw data into a meaningful structure that works toward explaining the process. Most likely, all that will appear from this would be a description of the relationships without

³⁵ Weiner, N., Cybernetics, J. Wiley and Sons, New York, N.Y., 1948, p. 37.

conclusive proof or of the exact weight one relationship exerts on another. This would be a frustrating problem for the systems analyst. Ideally, systems theory suggests that the analyst be chained to his numbers and their relationships, otherwise it would be impossible to grasp the significance of the data or their relationships. However, the great value of the systems approach to conceptualization lies in the way it views topics holistically. In a long run view, the entire business process could be explained and every subprocess meaningfully related to the whole. The first problem is, however, to determine what relationships might prove meaningful. Systems theory provides a way to examine relationships as parts of a whole.

F. AN AMPLIFICATION OF THE SYSTEMS APPROACH

1. The Necessary Elements in the Systems Concept

Systems are on-going processes and do not necessarily involve motion.³⁶ It is possible to define the following three concepts as necessary elements in systems theory:³⁷

³⁶ Only dynamic systems are considered in this paper, as pointed out on page 21. Motion need not be involved since it is possible to conceive of intangible systems and intangible flow wherein motion cannot be detected (e.g. the "flow" of words over a telephone line).

³⁷ Wohlstetter, A.J., Systems Analysis Versus System Design, The RAND Corp., Santa Monica, California, 1958, p. 1530. A more detailed description of the elements of systems analysis may be found in Optner, S.L., Systems Analysis, Prentice-Hall Inc., Englewood Cliffs, N.J., 1960, Chapters 2-6 inclusive.

- a. Objects are components of systems and constitute the phenomena acted upon by the system (e.g. iron ore in the smelting process). Objects in a system may be classified as inputs, processes, outputs, feedback(s)-control(s), and restrictions. These classes of objects will be called system components. Every system component may take a variety of values to describe a system state (i.e. components are flexible in value). Finally, all objects may be defined or undefined (e.g. the limitations on an hypothesis may not be known until put into action).
- b. Attributes are the properties of system components. A property is the external manifestation of the way in which an object is known, observed, or introduced in a process. Attributes may also exist for intangible components but these remain open for debate and conjecture by the social sciences (e.g. as in utility theory and social psychology). Attributes characterize the components of systems making possible the assignment of a value, regardless of which science (or discipline) applies it, and a dimensional description (including time). The attributes of objects may be altered as a result of a system operation.
- c. Relationships describe the bonds that link objects and attributes in the system process. Relationships are postulated as being possible among all system

elements, among systems and subsystems, and between two or more subsystems. Relationships may be characterized as first order when they are functionally necessary to each other (e.g. price and purchasing). Relationships may be characterized as second order if they are complementary, adding substantially to system performance when present, but not functionally essential (e.g. advertising and product sales). Finally, relationships may be characterized as third order when they are either redundant or contradictory. Redundancy describes a state whereby the system contains superfluous objects (e.g. more productive capacity than the market can absorb in terms of products moved in any given period of time, such as in the coal industry). A contradictory condition exists when the system contains two objects, which if one is true, the other by definition, is false (e.g. which theory of "consumer" motivation is correct-- Maslow's or McClellan's?).

A system, condition, situation, or state is postulated to describe a set of objects, attributes, and relationships. (It is important to remember that objects need not be concrete, they can exist also as intangibles.) A postulated proposition is one which is put forth hypothetically as a tentative statement.

2. System Malfunctions

The foregoing definitions of the three major elements of systems theory allowed Wohlstetter to postulate that system malfunctions may be possible. To account for system failure, which may take a wide variety of forms, a system malfunction is defined as a change in first, second, or third-order relationships of objects and attributes, such that the system passes its critical point. In passing the critical point,³⁸ one or more of the system objects is altered, setting up new relationships, and hence, new outputs (e.g. possible advertising programs that are misinterpreted by the public, and hence product sales drop and product "image" becomes damaged--the Edsel campaign). The term "critical" is employed as the change in system components, where a property crosses a threshold and assumes a finite value of a different order. Critical levels result from wide variations in the properties of system objects outside the range provided through system design. The concept of a system malfunction is postulated to provide a general term to describe a variety of system failures that occur when the system is required to operate outside its design limits.

³⁸ The critical point is, therefore, defined as that point in the changing of the relationships between system components whereby the relationship is changed to a different form than existed prior to the change. As an example, steel can be heated to high temperatures without losing its characteristics. However, beyond a certain temperature steel burns and loses some of its characteristics.

3. "Process" as a Special Component in Systems

The term "process," employed repeatedly in defining the on-going state of systems, is defined as the totality of components encompassed by all objects, attributes, and relationships that interact to produce a given result. Processes may be mental (thinking, planning, learning), mental-motor (testing, writing, constructing), or mechanical (operating, functioning). Processes apply to men, machines, markets, behaviour, and to every kind of activity whether physical or mental. Therefore, no system, within the definition of this presentation, may be said to exist without a process.

Process, then, is a type of system but without the feedback relationship existing. Thus, process must be a sequence of events leading to a goal. An event, however, is a happening in time. For example, the beginning or ending of a particular task or activity.³⁹

4. Types of Systems⁴⁰

a. Physical and Abstract Systems

Systems may be categorized through their similarities and dissimilarities. Physical systems deal with hardware, equip-

³⁹ Example from Moore, op. cit., p. 1.

⁴⁰ These various types of systems fit within the various levels of systems complexity as outlined on page 15. The placing of any particular type of system on a particular system level depends upon the nature of the system being considered.

ment, machinery, and, in general, real objects or artifacts. These systems may be contrasted with abstract systems. In the latter, symbols represent attributes of objects that may not be known to exist, except in the mind of the investigator. Concepts, plans, hypotheses, and ideas under investigation may be described as abstract systems.

Within the categories of physical and abstract systems, the on-going process may be seen at many levels. The component processes necessary to the operation of a total system are known as subsystems.⁴¹ Subsystems in turn may be further described as more detailed subsystems. The hierarchy of systems or the number of subsystems are dependent only upon the intrinsic complexity of the total system. It is conceivable that some systems may contain an infinite variety of processes and, conversely, other systems contain a finite, limited number of processes. At each identifiable process it is possible to stipulate that there is a system. Further, systems may operate simultaneously, in parallel (to borrow from electrical engineering), or in series without any restrictions other than those imposed by design or by the real world.

Each system may be said to exist within a specific environment. Systems must exist within, and are conditioned by, the environment. The first condition of this environment is the boundary within which the system is said to operate. Environment

⁴¹ Wohlstetter, op. cit., p. 153.

is defined as a set of all objects, within some specific limit, that may conceivably have a bearing upon the orientation of the system. Thus, the concepts of exogenous and endogenous variables may be applied.⁴²

The analysis of business problems is difficult to conduct in unlimited research in an attempt to understand all conditions that have impact upon system operation. The concept of a boundary prescribes a limitation within which the objects, attributes, and their relationships are adequately explained and manageable. Systems and their boundaries may be defined simply if the objects are absolute or finite in nature.⁴³ Physical systems can be described most conveniently in quantitative, performance terms (e.g. Breyer and systemics). Abstract systems, however, may not be as easily defined in finite terms (e.g. the process by which a consumer chooses one brand in preference to another). All systems operate within a given environment and a given boundary.

(1) Process Analysis as a Technique in
Examining Physical and Abstract Systems

The study of physical and abstract systems may take one of two courses: process analysis or final outcome analysis. In process analysis the system may be studied as a number of inti-

⁴² Howard, J.A., Marketing Management: Analysis and Planning, revised edition, R.D. Irwin Inc., Homewood, Illinois, 1963, Chapter 3, p. 38.

⁴³ Wohlstetter, op. cit.

mately related subsystems. This approach generates the process type of analysis. In a process-oriented analysis, the analyst defines the intermediate outputs of systems. He then studies the means by which they are introduced into serially-related processes for subsequent processing. In process analysis, there are many alternatives or options that qualify as intermediate solutions.

(2) Final-Outcome Analysis in Examining Physical and Abstract Systems

Juxtaposed to process analysis is final-outcome analysis. Under this method, the system is treated as a whole. The analyst is more concerned with overriding and results than the intermediate results. In outcome-oriented analysis there is no certain knowledge of all the intermediate outputs. Thus, there may be no means to establish the basis on which all the processes are united in the total system operation.

(3) Models and Their Uses in Examining Physical and Abstract Systems

If a model is an accurate replica or representation of the real world, it may be termed special purpose. Special purpose models may be brought to bear upon most problems with some calculable expectation of success. In contrast, general purpose models approximate the real world with something less than the subjectivity and substantive content of the special purpose model.⁴⁴ It follows that solutions derived by general purpose

⁴⁴ Weiner, op. cit., p. 54.

models are general in nature; in the same way, solutions derived by special purpose models are special purpose in nature. Neither is applicable to its opposite category of solutions without carefully stated assumptions.

(4) Decentralized and Centralized Systems
as Physical and Abstract Systems

Physical and abstract systems may be decentralized or centralized.⁴⁵ In a centralized system one element or one major subsystem plays a dominant role that may override the other system components. In this arrangement of systems and subsystems, the major subsystem is central to the operation. The minor subsystems are satellite to the central operation (e.g. the marketing mix). In a decentralized system, the converse may be true; major subsystems are of approximately equal value. Rather than being arranged around a central subsystem as satellites, the major subsystems are serially arranged. Otherwise they may be arranged in parallel with each providing superficially similar outputs. In both centralized and decentralized systems, inputs and outputs may be prescribed. Conceptually, both types of systems may be in existence in the physical and abstract systems categories.

b. Natural and Man-made Systems

Natural and man-made systems separate systems according to their origin. Natural systems are defined as those growing out

⁴⁵ Ibid.

of natural processes. Man-made systems are those in which man has made a contribution to the on-going process either through objects, attributes, or relationships. Natural and man-made systems may also be physical or abstract.⁴⁶

For the purposes of this paper the natural systems and the discussion of them will be omitted since, by definition, they bear little, if any, relevance for business--at least as can be ascertained currently.

(1) Open and Closed Man-made Systems

Man-made systems may reproduce, in a controlled environment, the natural conditions that are not manageable in the real world. Thus, such systems may be viewed as open systems; these trade their materials or energies with the environment in a regular or understandable manner. Most business activities are conducted in an environment of an open system.⁴⁷ Opposed to this are closed systems, which operate with relatively little interchange of either energy or materials with the environment (e.g. monopolies are partly closed systems when their processes and products are protected by patents). The objective in system design is to move toward a closed system through feedback-control or in a wider view, to understand the interplay of all the variables and their effects that act in and upon the system.

⁴⁶ Ibid.

⁴⁷ Hitch, op. cit., p. 33.

(2) Adaptive Man-made Systems

Man-made systems may also be adaptive. This commonly occurs when man must introduce input, process it, and deliver output. An adaptive system is one in which there is a continuous learning or self-organizing process in motion. In adaptive systems, the range of input may be wide and the processor may be required to deal with uncertain input⁴⁸ (e.g. computers and the effort being expended in to teach computers to learn from previous experience).

(3) Randomness in Man-made Systems

Man-made systems may be further characterized as having random properties. These exist in the natural as well as the man-made categories of systems. Randomness describes a condition of statistically unstable input or output. In a random system, input is not predictable and the system operation takes place within widely defined limits (e.g. the advertising process).⁴⁹ Adaptive systems may be designed to cope with a random condition. However, analysts typically attempt to restrict randomness in an effort to design simple systems. When randomness is among the important conditions of a situation, it may be relegated to one specific area of subsystem activity (e.g. the tendency to

⁴⁸ Weiner, op. cit., p. 66.

⁴⁹ Randomness can, however, be anticipated through principles of probabilistics. Thus, the probability of a particular random event actually occurring can be stated. Refer to the next section, page 55.

view each major area of the marketing mix as a separate and distinct unit even though functionally related). This is done to restrict the unstable objects, attributes, and relationships in ways which minimize their impact on other more stable subsystems.

(4) Cost of System Failure as an Element in Man-made Systems

The principal goals in system design are to reduce system failure at some cost or to understand the workings of the situation to be examined. Only man-made systems respond to the first goal with any statistical accuracy; where natural systems are concerned, the objects may not be manageable, hence the relationships are random and relatively unstable. Man expresses these uncertain situations through estimates of a probability of occurrence.

(5) A Generalization

From this discussion of natural and man-made systems it is possible to generalize somewhat. Natural systems are structured through the interplay of environmental forces much resembling the exogenous variables in marketing. The quality of structure is achieved when a set of system objects are organized into something approaching an adaptive operation. For example, marketing is inherently man-made and is a man-made system structured by man. When man designs the system, one of the principal goals is to reduce human failure, as it may contribute to system malfunction. The systems analyst may be called upon to design a system that

exists in a random ill-structured state. His objective may be to reorganize it so it may operate as a well-structured open system with the capability of adapting to a given range of inputs in a predetermined fashion.

c. Man-Machine Systems

In the man-machine system, the role of each component is defined. Either man or machine may be central to the operation. The system designer attempts to raise the quality of the human input to the level of the machine.

It may be that the implications for business of such a system are wide ranging. However, the topic of man-machine systems will not be discussed in this paper as it deals with machine capability, rigid definition of machine components, and rigid structuring of systems. It is felt that these systems bear little relevance for a thesis of this nature.

5. The Concept of "Total System"

The total system consists of all the objects, attributes, and relationships necessary to accomplish an objective, given a number of constraints. The term "system" is generally used most frequently to mean the total system and will also be the case in this paper. The objective of the total system defines the purpose for which all the system objects, attributes, and relationships have been organized. The constraints of the system

are the limitations placed upon its operation. Constraints define the boundary of a system and make it possible to state explicitly the condition under which it is intended to operate. Descriptions of systems must be expanded to include not only all of the objects but also all of the attributes and their relationships. For each object there may be only one attribute but there may be many relationships; the converse may also be true.

The concept of the total system allows the analyst to draw a wide but complete boundary around the topic under study. By defining the full scope of the system the analyst attempts to attack the underlying problem. The underlying problem may have relationships over a wide set of objects. This makes it necessary to test alternative solutions iteratively. The objective is to determine the behaviour of all system objects under varying conditions.

6. The Classes of Components of Systems

The components of systems are objects, inputs, processes, outputs, feedback(s)-control(s), and restrictions. Each is a particular component of systems since each, by definition (p. 26), is essential to the very nature of the systems concept.

a. Input, Process, and Output

The input component is the initiating force that provides the system with its operating material. Input is pos-

tulated to take one or more of the following forms:⁵⁰

- (1) The result of a previous process, in line, serially (e.g. learning process in purchasing).
- (2) The result of a previous process randomly generated (i.e. other than serial), (e.g. purchase of an impulse item).
- (3) The result of a process that is being reintroduced as a result of a prior system output (reference to prior satisfaction in making new purchases).

The results of processes are outputs. Outputs can also be defined as the purpose for which system objects, attributes, and relationships are brought together. Therefore, output is congruent with the objective, which is similarly defined. The outputs of subsystems are intermediate, as opposed to the outputs of systems which are final.

Outputs may be casually or mutually (complementary) dependent to provide suitable input to higher-order subsystems. Output introduced to a subsequent subsystem with no processing modification, may automatically become an input.

b. Feedback-Control

Feedback is defined as the subsystem function that compares outputs with a criterion or standard. Control is the

⁵⁰ Weiner, op. cit., p. 78.

objective of feedback and is considered to be a monitor of the state of the system. That is, subsystem operations are maintained by correcting or adjusting for differences between output and criteria. The term "feedback" implies the presence of a subsystem designed to detect or determine output with the purpose of achieving or maintaining control. Control implies a predetermined means of measuring output deviations from what was planned or anticipated.

The trial and error routine of the heuristic method is a feedback-control process. Individual differences in human analysts indicate that control may be achieved through the range of effectiveness from high to low. Analysis is generally dependent upon the intuitive, unregulated application of feedback-control as the device by which hypotheses are generated, tested, and declared reasonable.

Like input, feedback must be initiated to be introduced into system processing. This could be automatic as found in computer programming or be generated by human activity. The feedback subsystem in either case must be designed. The design goal is the maintenance or improvement of subsystem performance.

Business systems are not normally designed to operate exclusively upon exceptions, although the exception principle may be used. The design of systems must be broad enough to accept some variance in input. Because business is largely an open system it receives a number of inputs from many sources. Some of these are feedback sampled from activities within the business (endo-

genous) and some from outside the firm (exogenous). Analysis of business problems would require that boundaries be drawn to include all the sources of input and feedback that have impact upon the operation of the total system under study.

Feedback is intervened in the system. Intervention is defined as the means of changing an existing state by initiating a force to alter the existing state. Feedback activities may or may not override the existing input depending on the place, time, form, intensity, content, and duration of intervention.⁵¹ The analyst must intervene an existing state to fulfill his task. Intervention may cause the system to pass its critical point and shut down or run away. For the analyst no part of the system is, by definition, free of defect. The origin of system malfunction may be in any of the subsystems. Failure to locate and intervene in a system malfunction means the hypothesis cannot be considered as proven.

G. SOME SYSTEMS DEFINITIONS

In this section a very brief definition of some of the major terms employed in the study may be found.

⁵¹ Optner, S.L., Systems Analysis for Business Management, Prentice-Hall Inc., Englewood Cliffs, N.J., 1960, p. 64.

- Attributes:** The properties of objects that characterize the way in which an object is known, observed, or introduced in a process.
- Components of Systems:** Components of systems are objects, inputs, processes, outputs, feedback-controls, and restrictions.
- Control:** The objective of feedback and defined as a monitor of the state of the system.
- Feedback:** The function that compares outputs to a predetermined criterion, or standard.
- Input:** The initiating force that provides the system with its operating material.
- Objects:** The phenomena acted upon by the system.
- Open-ended:** Character of a system with a variety of random inputs, some that may not be either useful nor valuable, for the system to operate in a chosen environment.
- Outputs:** The purpose for which system objects are brought together; the term may be used synonymously with the term "objective."
- Process:** The totality of components encompassed by all objects, attributes, and relationships to produce a given result.
- Relationships:** Describe the bonds that link components and attributes in the system process.

System: An ongoing process of related activities or tangible and intangible objects in motion, in progress, or in a state of change such that the objectives of business are furthered.

CHAPTER III

TOWARDS AN UNDERSTANDING OF THE TERM "MARKETING SYSTEM"

Halbert states:

...in attempting to solve some of the conceptual problems of marketing we must direct our attention to defining and measuring the basic elements of our system. ¹

In this chapter, some preliminary steps are taken.

A. THE CONCEPT OF MARKETING SYSTEMS DEFINED

There are some relevant systems definitions in the marketing literature that should be examined in order to analyze their content. Thus, perhaps a workable definition of marketing systems might be constructed from what definitions have already been offered.

¹ Halbert, M., The Meaning and Sources of Marketing Theory, McGraw-Hill Inc., New York, N.Y., 1965, p. 141.

1. Ralph Breyer²

Breyer is probably the first marketing writer to talk of systems in marketing even though Shaw³ took a process (functional) approach to marketing which is partially a systems approach.⁴ Breyer felt that a need for a new approach to marketing was required when he stated:

...a new fundamental approach to the whole study of marketing, that somehow hinges upon the marketing channel, should be developed that would make distinct contributions to our knowledge and mastery of this field over and above all present practical and theoretical approaches. 5

Thus, Breyer develops his "systemic approach" to the study of marketing. The approach is based on constitutional economics, founded on the premise that all parts of a given system must be recognized and examined.

Breyer applies the methodology of institutional economics to only one facet of marketing--that of marketing controls. He recognizes, however, that "others in their respective fields

² Breyer, R.F., Quantitative Systemic Analysis and Control: Study No. 1, Channel and Channel Group Costing, College Offset Press, Philadelphia, Penn., 1949; and Breyer, R.F., The Marketing Institution, McGraw-Hill Inc., New York, N.Y., 1934.

³ Shaw, A.W., "Some Problems of Market Distribution," Quarterly Journal of Economics, Vol. 26, August, 1912, pp. 703-765.

⁴ Shaw's contribution is outlined on pages 79 and 120. His contribution is not presented in this chapter because it is very incomplete and rather narrow in its application.

⁵ Breyer, R.F., Quantitative Systemic Analysis and Control, op. cit., reviewed in an unpublished paper by R.S. Savitt, The University of California, Berkeley, May 9, 1963, p. v.

of special competence will test its values and refine its conceptions as opportunity presents itself."⁶ This same hope regarding the use of systems was also proposed by the writer of this study in the first chapter.

Like the writer, Breyer feels that there is a crucial need for more realistic and accurate means for describing and using the term "marketing channels." Unfortunately, from this point Breyer proceeds to examine relationships between, and attributes of, marketing agencies without defining what a system or, more specifically, what a marketing system is. Like so many others who followed him, Breyer chooses to ignore defining what it is that he is attempting to describe. Thus, systems in marketing are undefined as are the objects involved in the systems. Relationships and attributes are discussed, but without reference to particular objects, the terms become difficult to use. Further, Breyer does not consider the classes of elements in systems other than the process and control elements.

2. Reavis Cox⁷

Any discussion of Ralph Breyer and the "marketing system" should lead to a mentioning of the work of Reavis Cox. Since Breyer talks of marketing flows (an implicit characteristic of any system because of the input, process, output elements) Cox

⁶ Ibid.

⁷ Vaile, R.S., Grether, E.T., and Cox, R., Marketing in the American Economy, The Ronald Press Co., New York, N.Y., 1952.

builds upon the flow concept. Thus, Cox shows how goods are collected, sorted, and dispersed in the aggregate and constituent channels.

Cox, therefore, utilizes some sort of systems analysis when describing marketing since he, like Breyer, implies the input, process, and output elements of systems. Again, much like Breyer, Cox demonstrates that the collection, sorting, and dispersion activities can be costed and made operational in an accounting sense.⁸

Cox, however, goes further than Breyer in that he explicitly discusses "the marketing system." However, like Breyer, Cox neglects to define the meaning of marketing system and the elements involved in it.⁹ By defining the functions and activities involved in the marketing system, Cox must be considered as an early contributor to systems thinking in marketing.

3. Wroe Alderson¹⁰

Alderson views the concept of system as a managerial technique and also as a conceptual device. Yet, Alderson at no

⁸ Cox, R. and Goodman, C.S., "Marketing Costs of House Building Materials," Journal of Marketing, July, 1956, p. 142.

⁹ Vaile, R.S., et al., op. cit. p. 51.

¹⁰ Alderson, W., Marketing Behaviour and Executive Action, R.D. Irwin Inc., Homewood, Illinois, 1957, p. 68.

time attempts to define what a system is, although he repeatedly makes reference to organized behaviour systems. Further, he spends some effort on classifying some of their components.

The unique aspect of Alderson's contribution lies more in his pointing out, in 1950,¹¹ that marketing systems are organized behaviour systems characterized structurally by their parallelism, seriality, and circularity.

Another unique contribution of Alderson is his feeling that power and communication should be used as starting points for the analysis of systems.

Alderson almost completely sidesteps the initial stage of defining systems and discussing the nature and characteristics of them. To Alderson, it appears to be more important to classify the systems he sees and suggest possible ways of beginning an analysis of his observations.

Strangely, Alderson defines objectives of systems as survival and growth, attempts to describe the operation of marketing inputs and outputs, utilizes the dynamic characteristic of systems, talks in terms of system balance, frequently makes reference to "the marketing system," and speaks of open and closed systems. Thus, Alderson describes the major components of the systems concept, yet avoids definition of the meaning of the term "system."¹²

¹¹ Alderson, W., Theory in Marketing, Cox, R. and Alderson, W. (eds.), Chicago, Illinois, R.D. Irwin, 1950, p. 76.

¹² Alderson defines his approach as involving a sorting and matching process on page 199 of his Marketing Behaviour and Executive Action, *op. cit.* Alderson's works are also discussed on pages 84 and 96.

Alderson would have to be admitted to the group that took a "system view" of marketing in that he makes so wide a use of the term and discusses the components of the concept. However, Alderson would have to be criticized for the usage of his terminology with reference to systems since there are a number of gaps in his thinking. As an example, in his Marketing Behaviour and Executive Action, he defines an open system as one in which openings are steadily being created (p. 115). Yet, conventional systems theory would define an open system as one in which its materials or energies are traded with the environment in a regular and understandable manner.¹³ Implicit in Alderson's definition is an understanding of what a system is, although he never defines it, and an onus placed on the system to be open. The conventional view would contend that understanding of what systems are involved is necessary and the openness of the system is a characteristic, not creation, of it.

Later Alderson appears to correct his definition of open and closed systems for he states that a marketing system can be closed in the sense that all of the facilities and processes exist for performing customary transactions. Yet, the system may be open for agencies or the installation of a more effective program of activities.¹⁴

¹³ Optner, S.L., Systems Analysis for Business and Industrial Problem Solving, op. cit., p. 30.

¹⁴ Alderson, W., "Discussion of Behavioral Disciplines in Teaching and Practicing Marketing," The Social Responsibilities of Marketing, W.D. Stevens (ed.), A.M.A. Publications, December, 1961, p. 30.

One cannot fault Alderson for failing to be conventional, yet his thinking, as shown in the open system example, renders comprehension somewhat difficult. However, his advanced thinking and institutional approach has stimulated much research and writing utilizing systems as a basis for theory formulation.

4. William Lazer and Eugene J. Kelley¹⁵

Lazer and Kelley view systems in marketing as inherently managerial. In the introduction to their article they state explicitly that the systems approach is the central focus in implementing the marketing management concept. Yet, the authors hedge their opinion by broadening the topic so that systems also apply operations research techniques and thinking to marketing, develop more operational concepts and useful viewpoints of marketing, construct effective marketing models, and evolve more realistic and comprehensive marketing theories.

In Lazer and Kelley's opinion:

Marketing institutions and operations can be perceived as complex large-scale systems. Any group of marketing elements and activities that can be delineated physically or conceptually is a system. 16

Necessarily, the authors complement their definition by making reference to Stafford Beer's statement:

¹⁵ Lazer, W. and Kelley, E.J., "The Systems Approach to Marketing," Managerial Marketing: Perspectives and Viewpoints, Lazer and Kelley (eds.), R.D. Irwin Inc., Homewood, Illinois, 1962, p. 191.

¹⁶ Ibid., p. 192.

A system is any collection of entities that can be understood as forming a coherent group. The fact of their being capable of being understood as a coherent group is precisely what differentiates a system from a meaningless collection or jumble of parts and pieces...the statement at once reveals the relativity of this concept of a system. 17

The definition is really only a description of the central concept in any definition of a system--that of being a related group of factors. No mention is made of the parameters or components of systems nor to the dynamic aspect of the system concept.

5. George Fisk¹⁸

Fisk views systems in a more narrow manner than do some other writers. Inherent in the author's approach is the contention that systems are mainly applicable as a teaching technique. Consequently, Fisk discusses systems in the light of showing how "General Systems" theory can be used in the teaching of marketing. He contends that in the "General Systems" approach, marketing agencies are viewed as units of an organized behaviour system composed of aggregate and constituent channels of marketing through which flow inputs of work and outputs of utilities. These

¹⁷ Beer, S., "What Has Cybernetics to do with Operational Research," Operational Research Quarterly, Vol. 10, No. 1, March, 1959, p. 3.

¹⁸ Fisk, G., "The General Systems Approach to the Study of Marketing," The Social Responsibilities of Marketing, W.D. Stevens (ed.), A.M.A. Publications, December, 1961, p. 207.

are collected, sorted, and dispersed according to the decisions of controllers in enterprises which set the aggregate channel goals, subject to the constraints imposed by folkways, mores, competition, and government.

Fisk defines systems as:

A system is any collectivity of traceably interacting variables and attributes. Hence, in marketing one must be prepared to describe interactions either in word pictures or in mathematical language still too unfamiliar to too many of us.... Marketing systems are...social organizations seeking purposefully ends which are often incompatible. 19

Fisk presents a view of systems similar to the writer's in that he discusses objects, attributes, and relationships as parameters to systems and inputs, outputs, and processes as necessary classes of system objects.

6. Summary

A cursory examination of the marketing literature would reveal the widespread usage of the concept of "system." Much time and effort has been expended in the literature on describing the functions, nature, and characteristics of systems in marketing. Yet, an adequate general definition of what a marketing system is has been generally lacking until late in 1961.²⁰

Perhaps it is tacitly assumed that the concept of system is so simple that it does not require further definition

¹⁹ Ibid., p. 209.

²⁰ Refer to the article by Fisk, G., op. cit.

for marketing. Perhaps the impact of Breyer's The Marketing Institution,²¹ published in 1934, is sufficient explanation. Yet, the fact that Norbert Weiner made such an impact on the field of business theory with his Cybernetics²² in 1949 would negate this hypothesis as would Breyer's later work, Quantitative Systemic Analysis and Control: Study No. 1; Channel and Channel Group Costing, which was also published in 1949.²³

There remains, however, the paradox of no adequate definition of the concept of marketing system until 1961, even though the concept of system is so widely utilized. How could so many marketing theorists have made such an omission? The answer to the above question might lay in the theorists in marketing intentionally exploring the nature and characteristics of systems before attempting to define what systems are. Has the definition of systems been made to fit the research and literature or is the definition considered so obvious that the research and writings on the nature and characteristics of systems proceeds with full understanding of the meaning of systems even though the concept is explicitly undefined?

The writer has presented some historical perspective in the development of the systems concept in marketing. In summation, the evolution may be presented as:

21 Breyer, The Marketing Institution, op. cit.

22 Weiner, op. cit.

23 Breyer, op. cit.

- a. Breyer - The use of the term "marketing system" is employed widely. Some question arises though, whether the term is borrowed from another writer or discipline (e.g. constitutional economics).
- b. Cox - Elaborates upon Breyer's flow concepts and indicates suggestion of basic marketing processes (collection, sorting, dispersion). Presents a costing of marketing activities. No meaning of the term "marketing system" is offered. Indicates that two-way flows are possible in the marketing system.
- c. Alderson - Marketing is an organized behaviour system. He gives a classification of systems in marketing; reclassification of system activities (moving from meaningless to meaningful heterogeneity). Parallelism, seriality, and circularity are major characteristics of marketing system. Offers no definition of the term "marketing system." Indicates open and closed systems.
- d. Lazer and Kelley - Systems approach is given as the central focus in marketing management. Systems thinking allows operations research techniques to be applied to marketing, development of more operational concepts, construction of more effective marketing models and evolution of more realistic and comprehensive marketing theories

are offered. Also present a crude definition of marketing systems.

- e. Fisk - Definition of marketing systems offered.

Marketing agencies said to exist within an organized behaviour system.

In conclusion then, a somewhat more explicit definition of a marketing system may be stated as:

A marketing system is a meaningfully coherent and horizontally and/or vertically related group of interacting marketing elements or activities.

The above definition of a marketing system does not disagree with the general systems definition since it was developed through examining the systems literature and then applying appropriate aspects of that literature to marketing. The definition presented is more highly specialized than a general systems presentation in that some aspects have been expanded for application to marketing.

Implicit in the definition are a number of factors:

- a. Vertical relationships are those involving successive stages of activities while horizontal relationships involve those activities of a similar nature.
- b. Horizontal and vertical relationships must be explicitly stated since there is a tendency on the part of many marketers to think in terms of only horizontal relationships. Both or only one set of relationships may exist at a particular period of time.

- c. The activities observed must be coherent and meaningful since any other characteristics would deny the basic unity concept implied in any system.
- d. Marketing elements or activities remain loosely defined, for purposes of abstraction, as comprising institutions (agencies) and functions, respectively. Thus, the definition implies neither the institutional nor the functional approach but some sort of mix between the two approaches.²⁴
- e. The dynamic characteristic of systems is inferred in the term "interacting."
- f. Input, output, process, and flows components are not necessary to the definition as they are defined as particular classes of objects within systems. No discussion of systems is, however, possible without utilizing the classes of objects in systems.

B. A NECESSARY CHANGE IN DIRECTION OF THE STUDY

It appears that the study can no longer remain neither as abstract nor as "clean" as was, perhaps, the tone to this

²⁴ Some clarification of these approaches may be found in Duddy, E.A. and Revzan, D.A., Marketing: An Institutional Approach, second edition, McGraw-Hill Inc., New York, N.Y., 1953, Chapter 2.

point. It is possible to wend one's way through volumes of the marketing literature to detect inferences as to the usage of systems thinking by appropriate authors. However, such an approach is complex, confusing, and questionable in value. Rather than take such an avenue, the writer specifically elects explicit statements regarding the nature and characteristics of systems in marketing that meet those characteristics that fall into the four systems levels which are felt to exist in marketing (pp. 15-24 inclusive).

The second alternative has one major weakness--practically nothing has been written on the subject.

Therefore, since the general tone of the literature appears to imply that the institutional approach be taken, the writer adopts the generally held view. This is not to say that the institutional approach is the correct one for it is possible to conceive of functional systems, commodity systems, managerial systems, and indeed, historical systems that exist on all four systems levels. However, it is extremely difficult to present anything meaningful or of value by electing any other approach due to the lack of any meaningful treatments of these topics in the literature.

The change in direction, then, becomes a survey of the nature and characteristics of the term "system" as utilized in the institutional approach.

The writer elects to survey only the literature dealing with marketing channels in order to provide a comprehensive

treatment of one marketing system that exists on all four levels of systems complexity. Trading areas, functional and managerial, and other systems will be, therefore, omitted.

CHAPTER IV

THE NATURE AND CHARACTERISTICS OF MARKETING CHANNEL SYSTEMS

A. THE MEANING OF CHANNELS AS MARKETING SYSTEMS

1. Definition of Channels as Systems

An historical approach is offered to allow some insight into the evolution of the definition of channels. Necessarily, only a few writers are taken as a representative sample.

a. E. J. McCarthy²⁵

Any sequence of institutions from the producer to the consumer, including none or any number of middlemen, is called a channel of distribution. 26

McCarthy presents his well-known definition while discussing marketing agencies and agents. Perhaps as a direct result, his definition revolves around agents and agencies in

²⁵ McCarthy, E.J., Basic Marketing: A Managerial Approach, R.D. Irwin Inc., Homewood, Illinois, 1960.

²⁶ Ibid., p. 324.

the channel. Implicit in the definition, then, is the input, process, output elements of a system since McCarthy discusses the functions of the middlemen involved, in a preceding section.

McCarthy could, however, be criticized because he omitted to mention explicitly that flows of goods and services are involved. Also, the definition does not denote the dynamic aspect of systems--the process element that the writer feels to be essential to this survey. Where are the ongoing activities?

On the positive side, McCarthy must be commended for emphasizing the institutional nature of distribution in marketing, and for his statement that distribution channels still exist even if there are no middlemen (since the consumer may also be the producer).

McCarthy's approach is, of course, managerial yet he produces a sufficiently general definition of channels of distribution that management is not implied. His contribution makes an excellent starting point for anyone considering the nature of channels and what they are.

b. A. W. Shaw²⁷

Shaw is, perhaps, the first systems thinker in marketing. His own business experience suggested that systems for management were possible. Through extensive investigation Shaw

²⁷ Shaw, A.W., Some Problems in Market Distributions, Harvard University Press, Cambridge, Mass., 1915.

"discovered" the uniformity of procedures in spite of the variety of products produced and the outward differences of the separate business organizations he observed.

From his observations Shaw decided to devote his energies to the publication of the System magazine and to writing on marketing theory. Thus, Shaw perhaps propounded the first systems orientation to distribution (and, indeed, to marketing) when he stated:

Isolate any phase of business, strike into it anywhere, and the invariable essential element will be found to be the application of motion to materials. This may be stated, if you will, as the simplest general concept to which all the activities of manufacturing, selling, finance, and management can ultimately be reduced. 28

c. Ivan Wright and Charles Landon²⁹

Wright and Landon make some useful contributions to understanding the meaning of a channel of distribution as a system. Of particular note were their wide usage of the term "marketing system" even though the concept is completely undefined and no discussion of the nature and characteristics of the term are made.

²⁸ Shaw, A.W., An Approach to Business Problems, Harvard University Press, Cambridge, Mass., 1916, p. 1.

²⁹ Wright, I. and Landon, C.E., Readings in Marketing Principles, Prentice-Hall Inc., New York, N.Y., 1926.

Another major characteristic of Wright and Landon's writing is their usage of the term "distributive channels." Again, both concepts remain undefined.

Thus, we find that systems in marketing, or at least a systems approach to marketing, had evolved by 1926 and some thought had been devoted to channels of distribution.

d. Vaile, Grether, and Cox

A channel of distribution may be thought of as the combination and sequences of agencies through which one or more of the marketing flows moves. 30

The authors of the above statement offer the best definition of the channel of distribution when expressed as a system concept. Implicit in the definition are the unity necessary to all systems and the dynamic characteristic necessary for system activity. Lacking from the definition are the required factors of system parameters, attributes, and elements. The relational factor between system objects is present, however.

Vaile, Grether, and Cox also seem to detect the above weaknesses in their definition since they state that each flow is a series of movements from one agency to another.³¹ The use of the term "flow" appears to be somewhat inadequate, however, since specific systems elements (input, output, and process) are

³⁰ Vaile, R.S., et al., op. cit., p. 121.

³¹ Ibid.,

not involved. Later, the inadequacy is cleared up through the discussion of channel activities (collecting, sorting, dispersing).

Finally, the authors make explicit statements to the effect that no one activity or agency (the sequence of ownership) controls the distribution or dominates it.³²

e. Converse and Jones

Marketing distribution includes those activities which create place, time, and possession utilities. 33

The early definition provided by Converse and Jones typifies much of marketing thinking at that time. In many writers' opinions marketing and distribution seem to be synonymous terms. Converse and Jones, however, abstract their definition of distribution--no mention of channels is made--to the level that it encompasses every facet of marketing activity. Thus, the value of the Converse and Jones contribution would have to be considered more in terms of designating distribution as a major facet of marketing, even though distribution is not held to be the only marketing activity.

As a definition of channel systems the Converse and Jones contribution would have to be severely discounted. The ex-

³² Ibid., p. 150.

³³ Converse, P.D. and Jones, F.M., Introduction to Marketing, Prentice-Hall Inc., New York, N.Y., 1948, p. 4.

treme generality of the concept permits one to read almost any meaning into it that one cares to make. The only real value of the definition lies in the fact that it is objectives oriented-- creation of place, time, and possession utilities. Thus, distribution permits attainment of objectives but the questions remain as to who benefits? and what activities are involved?

f. V. F. Ridgeway³⁴

A marketing channel is an operating system with an identifiable and distinctive pattern of behaviour.... The economic process, beginning with the acquisition of resources and running through manufacturing to the ultimate consumption is a continuous process, but in many industries the economic flow is the result of a number of organizations, each with an independent identity and separate legal status...their activities must form one extended system. 35

Later, Ridgeway adds to the above definition by stating:

...in order for the system to operate effectively as an integrated whole there must be some administration of the system as a whole, not merely administration of the separate organizations within that system. 36

Upon reading Ridgeway one is strongly reminded of McCarthy's channel captains, Alderson's organized behaviour sys-

³⁴ Ridgeway, V.E., "Administration of Manufacturer-Dealer Systems," Administrative Science Quarterly, March, 1957, pp. 464-467.

³⁵ Ibid., p. 465.

³⁶ Ibid.

tems, and Cox's flow concepts. Ridgeway offers an excellent middle ground for those wishing to compromise on a systems definition of channels.

Ridgeway avoids making a concise definition of marketing channels and discusses at some length the systems approach. Thus, it is difficult for one to evaluate his contribution. The contribution is felt to be valuable, however, because of its seeming unification of several different writers--notably McCarthy, Alderson, and Cox.

g. Wroe Alderson

The system...is classed as an ecological system because of the peculiar nature of the bond among the components. They are sufficiently integrated to permit the system to operate as a whole, but the bond is loose enough to allow for the replacement or addition of components. 37

Alderson, like Ridgeway, does not explicitly define what is meant in his definition of marketing channels. There can be little doubt that Alderson takes a systems approach to marketing but it is extremely difficult to garner exactly what it is that he is trying to say. His definition involves only the relational aspect of systems and not the attributes of the components. Further, although Alderson mentions components of systems, he neglects to state what they are.

³⁷ Alderson, W., Marketing Behaviour and Executive Action, op. cit., p. 32.

h. Summary and Conclusions

There is a great lack in the literature of an adequate definition of marketing channels that employs systems as a way of expressing the concept. Necessarily, all the definitions that are considered to be of relevance, regardless of their systems content, are surveyed. It is relatively easy to demonstrate that some elements of systems thinking are present but in no definition are all the elements present.

Naturally, when one is looking for particular meanings and content of meanings in an ill-defined and poorly structured area of knowledge, it is easy for one to find whatever meanings one wishes. Yet, it would have to be admitted that systems thinking can be widely applied to marketing.

This writer has devoted some time to evaluating the definitions offered of marketing channels that employ systems thinking and has decided that he prefers portions of three:

- (1) Cox's definition because of its emphasis on agencies and flows.
- (2) Ridgeway's contribution because it offers potential for expansion of the definition in a number of directions, according to the reader's own bent.
- (3) Alderson's for his emphasis on ecology, behaviour systems, and flexibility in relationships between channel components.

Perhaps a somewhat general systems definition of a marketing channel would be:

A marketing channel of distribution is a sequence of agencies and activities through which product(s) flow(s) in the mutual attainment of customer satisfaction and business objectives.

The general definition above implies a number of factors:

- (1) Both agencies and activities are involved. Agencies because the approach is institutional and activities because of the connotation of channels being organized behaviour systems.
- (2) Product flows must be involved. This requires one or more products and involves inputs, processes, outputs, feedback, controls, and restrictions as necessary elements in the system.
- (3) Agencies form subsystems of inputs, outputs, processes, and controls and functions performed in these elements are activities.
- (4) Mutual attainment of ultimate consumer satisfaction and business objectives must take place. The latter for survival and growth and the former in recognition of the central importance of the concept of the market.

There are also some weaknesses in the general definition. The worst weaknesses are the omission of the control

elements and the restrictions within which channels operate, and the necessity to imply the following characteristics:

- (1) Dynamic ongoing processes--the central feature of systems.
- (2) Parameters of system objects (without stating what the objects are).
- (3) Relationships between agencies based on their attributes (activities).
- (4) The difficulty of presenting a meaningful and coherent definition if all the omitted elements are present.

In conclusion, one may state that it is extremely difficult to make a completely systems-oriented definition of a marketing channel without sacrificing either the marketing or the systems content. However, if one reverts back to the indivisible activity concept it becomes readily apparent that the concept of channel cannot help but fall on all four levels since more than one process is implied as are more than one subsystem and more than one activity.

B. THE CHARACTERISTICS OF MARKETING CHANNEL SYSTEMS

There is a paucity of information in the literature regarding descriptions of channel systems. Due to the lack of

sources the survey will be necessarily brief and some space will be devoted to filling gaps regarding the topic at hand.

1. Lazer and Kelley

Lazer and Kelley provide the best abstract of the nature and characteristics of marketing systems. According to Lazer and Kelley, marketing systems include the following component elements:³⁸

- a. A set of functionally interdependent marketing relationships among people and institutions in the system--manufacturers, wholesalers, retailers, facilitating agencies, and consumers.
- b. Interaction between individuals and firms necessary to maintain relationships including adjustment to change, innovation, co-operation, competition, linkages, and blockages.
- c. The establishment of objectives, goals, targets, beliefs, symbols, and sentiments which evolve from and reinforce the interaction. This results in determining realistic marketing objectives and instituting favourable programs, images, attitudes, opinions, and practices.

³⁸ Lazer, W. and Kelley, E.J., "Systems Perspective of Marketing Activity," Managerial Marketing: Perspectives and Viewpoints, revised edition, 1962, R.D. Irwin Inc., Homewood, Illinois, p. 191.

- d. A consumer-oriented environment within which interactions take place subject to the constraints of a competitive market economy, a recognized legal and socio-economic climate, and the accepted relationships and practices of marketing functionaires.
- e. Technology of marketing including communications media, credit facilities, standardization and credit techniques, marketing research, and physical distribution techniques.

Thus, each marketing system possesses a quality of being undivided. The system per se is complete and unbroken: it is a total entity.³⁹ The problem, of course, is how to determine what is an unbroken state. Lazer and Kelley imply closed systems since there can be no alternative in their definition. Systems theory would quarrel with Kelley and Lazer's statement since open systems are also possible and it is a widely held tenet that business is an open system.⁴⁰ Thus, it may be considered a sufficient criterion of identifying a system that all the components of the system are guided to a common purpose. Necessarily, some sort of control is required but characteristically such control would be neither centralized nor rigid.⁴¹

³⁹ Ibid., p. 193.

⁴⁰ Optner, loc. cit.

⁴¹ Davidson and McCarthy might contend that centralized control is possible through the "channel captain." However, there are some serious questions as to how extensive and complete the control of the channel captain is.

Two concepts that Kelley and Lazer feel bear upon the integrated character of the system viewpoint should be mentioned:

- a. The concept of synthesizing the elements and subsystems involved into a whole is required. It is concerned with integrating the component parts mentioned above into a whole.
- b. The concept of linkages is necessary. Linkages refer to joining together of two or more separate, distinct, or major systems that can function more or less independently, to create a more efficient "super" system.

Therefore, marketing systems can be viewed in terms of combinations of groups of systems.

The view expressed by Lazer and Kelley is essentially that held by the operations researcher. Application of the systems approach is not a matter of studying an individual segment of marketing activity. Rather, it requires analysis of the elements and their functions and interactions from the point of view of the contributions of the total system.

2. McCammon and Little

McCammon and Little provide an excellent discussion of channels as operating systems. In their opinion, the following characteristics of channels are possible:⁴²

42

McCammon, B.C. and Little, R.W., "Marketing Channels: Analytical Systems and Approaches," Science in Marketing, G. Schwartz

- a. The channel consists of interrelated components that are structured to produce predetermined results. These components may include two or more of the following: original sellers, agent middlemen; merchant middlemen, facilitating agencies, and influentials within the communication network, and ultimate buyers.
- b. Members of the channel strive to achieve mutually acceptable objectives. The goals of individual participants are often incompatible but, through a process of bargaining and accommodation, divergent aspirations are reconciled and the need for co-operation is recognized.
- c. Activities performed by channel members are undertaken sequentially and thus it is logical to think of such activities as "marketing flows."
- d. A marketing channel is an open system in the sense that participation in it is voluntary.
- e. A single enterprise usually "administers" the channel.
- f. The behaviour of channel members, particularly in a well established channel, is "regulated" by a code that specifies types of acceptable competitive behaviour. The occupational code consists of informally established group norms, and a subtle but clear array of sanctions is used in most channels to control the behaviour of participants.

According to McCammon and Little, the view of channels as an organized behaviour system has several intrinsic advantages. First, this approach recognizes the fact that a channel is a purposive and rational assemblage of firms rather than a random collection of enterprises. (This randomness factor is an almost universal factor that disqualifies many supposed "systems" from actually being what they claim. - L. W.) Second, the systems concept emphasizes the existence of co-operative, as well as antagonistic, behaviour within the channel. Third, the channel is perceived as a unique social organism that reflects the hopes, goals, and aspirations of its participants. Fourth, the marketing channel, from a systems point of view, is recognized as a basic "unit of competition"--a concept that broadens study of economic rivalry (i.e. a firm can fail not only because of its own imperfections but also because it is a member of the wrong system). Fifth, the notion that a channel is an operating system provides a basis for identifying disfunctions that are systems-generated (or malfunctions as employed in the abstract of systems - L. W.).

McCammon and Little, as they acknowledge, borrow largely from Vaile, Grether, and Cox,⁴² Alderson,⁴³ McCarthy,⁴⁴ Fisk,⁴⁵

⁴² Vaile, R.S., et al., op. cit.

⁴³ Alderson, W., Marketing Behaviour and Executive Action, op. cit.

⁴⁴ McCarthy, E.J., op. cit.

⁴⁵ Fisk, G., op. cit.

Davidson,⁴⁶ and Ridgeway.⁴⁷ In fairness to the latter authors, it must be pointed out that there are a number of faults in the presentation made. The greatest fault is the use of the term "marketing channel." Like many writers the authors seem to ignore the basic characteristic that channels are not just arrangements of specialized agencies but also flows of information, controls, and ownership. Thus, at any time, a physical channel has many associated channels of intangibles attached.

The second weakness is the emphasis on flows without specifying, as Vaile, Grether, and Cox indicate, that flows may be two-way as well as one-way. That is, flows may go either forward or backward. Further, Alderson's statement that channels are characterized by their parallelism, seriality, and circularity has been largely ignored, yet it is felt that this is a major contribution to understanding channels.

The final weaknesses in McCammon and Little's contribution lies in their suggestion that channels are relatively permanent in nature. This writer feels that Alderson's idea of channels being loose coalitions of firms striving for mutually dependent goals is a far better statement regarding the permanence of channels.

⁴⁶ Davidson, W.R. and Brown, P.L., Retailing Management, 2nd edition, Ronald Press Co., New York, N.Y., 1960.

⁴⁷ Ridgeway, V.E., op. cit.

3. Objectives of Marketing Channels

The marketing channel must be goal-directed to function effectively as a system.⁴⁸ Unfortunately, the goals or objectives of marketing systems and subsystems are not always clearly specified or even compatible.⁴⁹ To the extent that a marketing organization does not always specify objectives clearly and is not able to co-ordinate completely various marketing subsystems to achieve goal-directed action, then it seems reasonable to assume that the individual organization goals for all the channel members cannot be the same or oriented in the same direction since by the very differences in the natures and functions, each member cannot be expected to possess identical sets of goals. Certain constants might appear in every agency goal (e.g. customer satisfaction or maximum profitability) but it could hardly be held that each member of the channel possesses a common set of goals.

Every business system, in trying to achieve common goals, operates through subsystems which have their own respective goals. As a result, there are usually conflicts in any business system. The concept of trade-off between subsystems to achieve

⁴⁸ Lazer, W., and Kelley, E.J., "The Systems Approach to Marketing," op. cit., p. 198.

⁴⁹ It is not possible to assume that a marketing channel cannot be a system if one assumes that there is a basic unity in the very concept of channels regarding flows of products, information, ownership, negotiation, and financing.

greater efficiency of the overall system becomes important. A main consideration in a systems approach to marketing channels becomes, given certain marketing conditions and resources, how to determine the manner in which they can be programmed to achieve the optimum goals of all channel members. As can be surmised, reconciliation between goals of all channel members becomes necessary.

The systems approach, which emphasizes integration and linkages, considers the functional requirements of the overall system and not the functional requirements of the individual subsystems. Intersubsystem concession occurs on the part of marketing agencies (units) within the overall business system so that major goals will be achieved. This intersubsystem concession can, perhaps, be held as the synergistic effect of channel systems. Through concession, profits earned by the channel members are maximized.

4. The Scope and Complexity of Marketing Channel Systems⁵⁰

Marketing channels can be large and complex in extent. Channels can also, however, be relatively small and simple, such as in short, direct channels. Therefore, marketing channels contain a wide variety of components and interrelationships that have infinite variations. Also, incomplete information exists concern-

⁵⁰ Lazer and Kelley, op. cit., p. 200.

ing each component of the channels system so that marketing theorists and managers always deal with systems under conditions of uncertainty. The large number of variables and the existing uncertainty, together with the impact of the change in one variable on other marketing factors, compounds complexity.

5. Competition and Change in Marketing Channel Systems

A characteristic of all marketing channels is that they are competitive systems. Companies with well designed marketing systems are challenged constantly by rational competitors who are trying to limit, reduce, block, or destroy the effectiveness of the company's system. Similarly, channels compete constantly with one another and attempt to limit, reduce, block, or destroy the effectiveness of other channels. However, this competition is done by agencies that utilize channels as competitive weapons. Thus, strategic and dynamic aspects of the channel systems are significant. The marketing theorist should be prepared to deal with explaining defensive and offensive activities regarding channel systems in order to maintain market positions, services, growth, and development.

6. Summary and Conclusions

The state of current literature dealing with marketing channels as systems is extremely incomplete. There are a number of areas involving the characteristics of channel systems that

require work before a meaningful collection of writings is available. A suggested list of topics might include the following:

- a. Intelligence networks and communication in channel systems.
- b. Open and closed channel systems.
- c. The competitive environment of marketing channel systems.
- d. The scope and complexity of channels.
- e. Improved verbal descriptions of channels.
- f. More advances on models of channels.
- g. Decision making within channel systems.

It is the hope of the writer that some work will be done in the above areas. Some crude beginnings have been suggested in this section.

If one were to choose an ideal list of characteristics of marketing channel systems, the Lazer and Kelley list would probably be best. Certainly the McCammon and Little list is much too loose for general usage. As pointed out in the critique, Lazer and Kelley's contribution might well be supplemented by that of McCammon and Little. The latter's contribution might supplement the former's list by propounding the following characteristics:

- a. One aspect of marketing channels consists of inter-related components (agencies) that are structured to produce predetermined results.

- b. In striving for mutually acceptable goals it should be realized that not all members may be fully satisfied, or even partially satisfied.
- c. Channels are multiform in nature involving two-way flows of intelligence, productive effort, ownership, and negotiations.⁵¹
- d. Control and regulation in channels is a function of the environment⁵² (social, legal, political, psychological, and economic) and not just "channel captains" or mutually acceptable codes of competitive behaviour.
- e. Channels are operating systems that may also perform disfunctions. That is, some channels and channel agencies may not be the optimum arrangement in furthering such goals as sales and profit maximization and efficient resource utilization. This fact becomes evident when one considers channels of distribution for dairy products. One could not expect men's shirts to be distributed through such channels since the ramifications for sales and resource utilization of shirts become obvious.
- f. Channels compete as do the firms within them.

⁵¹ Other flows are also possible in channels. These will be discussed in Chapter V.

⁵² For a partial treatment of the controls and restrictions on channels, see Kelley, E.J. and Lazer, W., "Interdisciplinary Contributions to Marketing," Transportation Paper No. 5, University of Michigan, Ann Arbor, Michigan, 1962.

C. MODELS OF MARKETING CHANNEL SYSTEMS

1. The Role of Systems Models

The starting point in a systems model is not a goal but the model of a total functioning unit so that one can analyze and describe the unit observed. However, the liberty is taken in this survey to expand the focus to include the channel within which the unit exists. Therefore, a system model of channels, or a channel, is a realistic representation of an ongoing marketingsystem, a channel, capable of achieving multiple goals. Systems models recognize the multifunctional and multi-dimensional units involved in reaching marketing goals. Systems models should also recognize the fact that some inputs must be allocated to non-goal directed effort. Inputs may be allocated to functions (as discussed in the next chapter) which are involved in maintaining the marketing channel itself, achieving supporting marketing services, extending action which permit the use of effective marketing "striking power," but which are not directly goal-oriented functions in the sense of satisfying customer needs and wants in the short run. If such activities help to ensure the effective utilization of resources in the long run, then the inputs may be viewed as goal-directed.

A system model is based on the conception of all of the marketing elements or activities working together on an integrated and co-ordinated basis for the purpose of achieving the

objectives of the overall system and not just for the purpose of achieving a subgoal (i.e., the goal(s) of the individual units in the channel). Therefore, the system model which takes into consideration conflicts between subgoals is not as idealized a type of model as the goal model.⁵³

2. The Approaches to Construction of Marketing Systems Models and the Uses of Marketing Models

Dr. Lazer⁵⁴ proposes two approaches to the construction of marketing systems models. First, however, Lazer explicitly states that models are viewed as systems. Taken as systems, the approaches to model building are:

- a. Abstraction - perception of a marketing situation in a way that permits the recognition of relationships between a number of variables.
- b. Realization - the process is reversed, starting first with a logically consistent conceptual system and then introducing some aspect of the real world.

Several uses of models in marketing are suggested by Lazer:⁵⁵

- a. Marketing models provide a frame of reference for solving marketing problems.

⁵³ Lazer, W., "The Role of Models in Marketing," Journal of Marketing, April, 1962, pp. 9-14.

⁵⁴ Ibid.

⁵⁵ Ibid.

- b. Marketing models may play an explicative role, and as such, they are suggestive and flexible.
- c. Marketing models are useful aids in making predictions.
- d. Marketing models can be useful in theory construction.
- e. Marketing models may stimulate the generation of hypotheses, which can then be verified (sic) and tested.⁵⁶

No critique or amplification will be offered to Dr. Lazer's contribution. It is felt to be a sound and basic approach to model building and is, as far as can be ascertained, the only work on the subject.

3. Mathematical Simulation of Marketing Channels

The work being done on this topic is just beginning. While there have been a few contributions in the area, notably two, much remains to be done.

The two major contributions to mathematical models of channel systems are:

- a. Forrester⁵⁷

The approach taken by Forrester, as well as those taken by his contemporaries in the field of mathematical simu-

⁵⁶ Ibid., p. 249.

⁵⁷ Forrester, J.W., "Industrial Dynamics: A Major Breakthrough for Decision Makers," Harvard Business Review, Vol. 36, No. 4, July-August, 1958, p. 37.

lation of channels, is largely managerial. His approach to the topic is interesting and possesses potential for the systems approach. As such, the liberty is taken to discuss Forrester's work here.

In the early 1950's Forrester began to simulate company systems on computers. He uses the term "company system" in a very broad sense of including the firm's relationships with suppliers and intermediaries as well as its internal operations. Consequently, Forrester simulates a major part of the firm's marketing channels. He justifies this approach by arguing that "manufacturing, finance, distribution, organization, advertising, and research have too often been viewed as separate skills and not as part of a unified system."⁵⁸ Thus, Forrester states that the task of management is to interrelate the flows of information, materials, manpower, money, and capital equipment so as to achieve a higher standard of living, stability of employment, profit to the owners, and rewards appropriate to the success of the manager. Therefore, his models are programmed to depict interrelationships between these five flows.

The development of this type of model requires data on the number and types of firms in the channel, on the delays in decisions and actions that are characteristic of the channel, and on the participants' ordering and inventory policies. Given these and other required inputs in appropriate mathematical form, the programmer can simulate the behaviour of a channel over time.

⁵⁸ Ibid., p. 38.

b. Balderston and Hoggatt⁴⁹

Balderston and Hoggatt, in their study of the lumber industry, designed a model to show how limits on market information, decentralization of market decisions, and institutional alignments affect and are affected by economic forces. The writers list six types of variables:

- (1) Economic forces (price, quantity, cost, and demand data).
- (2) Commodity flows (designed to reflect distribution patterns).
- (3) Accounting and cash flow data (including an accounting structure for each firm in the channel and an appropriate mathematical treatment of cash flow patterns).
- (4) Decision rule data (for each type of firm in the channel).
- (5) Information flows between firms.
- (6) Institutional forces and norms of behaviour.

The Balderston and Hoggatt model (both writings deal with the same model) simulates interaction patterns that are often

⁴⁹ Balderston, F.E. and Hoggatt, A.C., Simulation of Market Processes, Iber Special Publications, Berkeley, California, 1962; and "Simulation Models: Analytical Variety and the Problem of Model Reduction," Symposium on Simulation Models: Methodology and Applications to the Behavioral Sciences, South-Western Publishing Co., Cincinnati, Ohio, 1963, cited in G. Schwartz, op. cit., p. 333.

too complicated to reduce to analytical solution. Consequently, the concept of a system in equilibrium and the notion of achieving an optimal solution are ideas that have to be discarded in many cases. Simulation models, however, provide a basis for determining the extent to which specified alternatives yield improved results, and thus, they have considerable significance for management. Further, marketing theorists are permitted insights into evaluation of alternative hypotheses regarding channel behaviour.⁵⁰

c. Summary and Conclusions

It would appear, as Schwartz⁵¹ contends, that all channel simulation models have several common characteristics:

- (1) They are programmed on digital computers and are designed to depict comprehensively the operating characteristics of a system.
- (2) All simulation models are dynamic rather than static.
- (3) If the decision maker, or the theorist, accepts the assumptions included in the model, the probable consequences of alternative courses of action can be predicted.

⁵⁰ A model by the following authors appears to be very similar to those established by Forrester, Balderston, and Hoggatt. Amstutz, A. and Tallman, G.B., "Dynamic Simulation Applied to Marketing," Marketing Keys to Profits in the 1960's, W.K. Dolva (ed.), American Marketing Association, Chicago, Illinois, 1959, pp. 78-95.

⁵¹ Schwartz, G., op. cit., p. 333.

- (4) Simulation models provide a basis for isolating system-generated fluctuations.

Thus, although channel simulation models are still in the experimental stage, they represent a logical mathematical extension of the systems concept in marketing and complement the work of earlier theorists. The orientation has been, in channel simulation models, largely specialized for one level of system complexity and managerial, yet it is a relatively easy task to foresee how such models might be applied to more levels in the near future.

4. Verbal Descriptions of Channel Systems Models

There are a number of efforts devoted to verbal descriptions of channel systems. The descriptions, while considered true models in the sense of helping to analyze and understand, lack much of the analytical rigor and preciseness found in simulation models. However, verbal descriptions are effective devices for detecting and emphasizing the complexity of interfirm alignments. Further, such models also provide a basis for isolating grossly inefficient linkages.

McCammon and Little list the most prominent writers in the field of verbal descriptions of channel systems:

- a. Vaile, Grether, and Cox⁵² - Contributions of a "marketing flows" concept and notational systems used

⁵² Vaile, R.S., et al., op. cit., pp. 121-133.

in channel descriptions that permit plotting interaction patterns in channels and facilitate identifying the span of ownership and locus of power in a channel.

- b. Breyer⁵³ - Contributed some elaboration of notational systems. Particularly noted for his unit marketing channel concept⁵⁴ and his emphasis on exploring the quantitative analysis and control of channels.⁵⁵
- c. Revzan⁵⁶ - Notational channel-systems description that provides a basis for symbolically indicating the types of intermediaries participating in the channel as well as the extent to which each participates in specified functional flows. The system used by Revzan also provides a basis for identifying the span of ownership and locus of power in the channel.

One might also include a mention of Clewett's collection of writings⁵⁷ that discuss channel systems models. The

⁵³ Breyer, R.F., Quantitative Systemic Analysis and Control: Study No. 1, op. cit., Chapter 2.

⁵⁴ Ibid., p. 29.

⁵⁵ Ibid., p. 7.

⁵⁶ Revzan, D.A., Wholesaling in Marketing Organizations, op. cit., p. 112.

⁵⁷ Clewett, R.M., Marketing Channels for Manufactured Products, R.D. Irwin Inc., Homewood, Illinois, 1954.

Clewett approach is highly managerial in orientation but three articles are particularly relevant:

- a. Duncan⁵⁸ - Duncan lists factors necessary for channel selection and inherently views the selection process as a system.
- b. Sessions⁵⁹ - Sessions' contribution might be classed with that of Duncan. However, the point of view is broader and allows a more rigid analysis.
- c. Sevin⁶⁰ - Like most works dealing with channel cost analysis, the orientation is managerial with some slight mentions of systems theory.

The above three writings are interesting in that they present some aspects of the literature that round out the discussion of channels and systems.

⁵⁸ Duncan, D.J., "Selecting a Channel of Distribution," Marketing Channels for Manufactured Products, op. cit., p. 367.

⁵⁹ Sessions, R.E., "Effective Use of Marketing Channels," op. cit., p. 404.

⁶⁰ Sevin, C.H., "Analytical Approach to Channel Policies--Marketing Cost Analysis," op. cit., p. 433.

CHAPTER V

THE PROCESS ELEMENT IN MARKETING CHANNEL SYSTEMS

As stated in the introductory chapter, and reiterated in the abstract of the concept of system, the process element in systems is an essential characteristic. As long as the process component remains missing from the activities of input, output, and feedback-control there is no system. Yet, one or more of the other elements may not be present in the system at a particular point of time and the system will still be recognized as such. Thus, the dynamic ongoing activity in systems is essential.

In this chapter the process element in systems will be examined. Of particular concern will be the need to sort out the process activities in marketing in order to organize and understand the input, output, feedback-control, and restriction components in the marketing system that are discussed in the next chapter.

A. DEFINITION AND DISCUSSION: THE MARKETING PROCESS

By definition, a system must imply the process component. Further, since the process component is so necessary to understanding systems thinking it is necessary to define its meaning in terms of marketing.

Duddy and Revzan¹ make, perhaps, the best contribution to marketing systems thinking since they unite² the functional and institutional approaches by stating that:

It becomes clear that an institutional approach to the study of marketing comprehends a study of these elements: (1) functional activity, (2) structural organization... 3

In Duddy and Revzan's view, marketing functions are homogeneous groups of activities which are necessary to the performance of the general function of distribution. Thus, marketing comes to be defined as a process of exchange involving a series of activities necessary to the movement of goods or services into consumption. Functional analysis calls attention to the basic nature of these operations. Forms of marketing organization may change, and the relative importance of the different functions may be affected by changing conditions, but the basic functions will always be present in any society in which exchange is carried on.

¹ Duddy, E.A. and Revzan, D.A., op. cit., p. 20.

² Strictly speaking, Duddy and Revzan refer to their approach as "institutionalism," wherein "implicit in the definition is the notion of marketing as a process resulting from the functioning of co-ordinated market structures." (p. 17)

³ Duddy and Revzan, loc. cit.

The above writers are the only ones who explicitly make such a stand and they provide a strong base upon which to view marketing processes.

Unique to Duddy and Revzan is the unification of the functional and institutional approaches so that the vital systems characteristic of unity is present. More common to systems thinking in marketing is their emphasis on activities taken as components of a whole (or system elements in the total system), the necessity to strip the bulk away to get at the basic nature of marketing and the stress on dynamic relationships.

In order to abstract their definition somewhat, the author has taken the liberty to redefine Duddy and Revzan's definition of the marketing process as:

The sum of the activities performed by the agencies, including users and ultimate consumers, in marketing channel systems.

The redefinition permits avoiding heavy dependence on one writer, allows a wider basis for comparison, and allows a somewhat better fit to the definition of channel systems proposed earlier by the writer:

A marketing channel of distribution is a sequence of agencies and activities through which product(s) flow(s) in the mutual attainment of customer satisfaction and business objectives.⁴

⁴ This survey, page 86.

The risk is run of biasing the survey seriously by adopting the above definition of the marketing process. However, the functional and institutional approaches are united (a necessary step in itself), systems thinking is maintained and avoidance of strong flavourings of current writers in marketing is somewhat lessened so that a consensus may be more easily arrived at.

B. THE MARKETING FUNCTIONS AS PROCESS ELEMENTS

The marketing functions operate through various kinds of marketing agencies or structures. Thus, functional activity is purposeful activity. Marketing institutions, or agencies, are functional in the sense that they give expression to the activities of groups of businessmen--activities which are necessary for the group's existence, for its improvement, or for achieving its goals.

Since it is implied in the definition of the market process that marketing activities mean marketing functions (p. 7) the functions performed in marketing will be examined. It is held that the marketing functions are performed within some institutional framework. It is assumed that each type of agency in a channel performs different functions from others in the channel and that the grouping of functions performed by each defines the agency type.

One possible source of confusion involves distinguishing between marketing functions and marketing flows. The literature seems to be strangely silent on this point. According to Bartels:

Marketing is not merely institutional activities but a process by the performance of which the institutions are related. In accordance with this definition, a concept of the marketing activity replaces somewhat that of the activities of marketing, because the separate actions involved in the transfer of goods and titles are consolidated into a process or act. The subject is thus no longer merely described but is interpreted. 5

To the extent that marketing is a process, the functions performed within the process constitute subprocesses. No distinction, then, is made between basic marketing processes and marketing functions. The two are synonymous terms involving identical activities. We come to an impasse, as stated by Duddy and Revzan, wherein "the various marketing authorities cannot seem to agree on a definitive list of marketing functions."⁶

1. Bucklin⁷

Bucklin attempts to analyze channels by setting up criteria. Thus, his analysis begins with identification of the

⁵ Bartels, R., The Development of Marketing Thought, R.D. Irwin Inc., Homewood, Illinois, 1962, p. 184.

⁶ Duddy, E.A. and Revzan, D.A., op. cit., p. 21.

⁷ Bucklin, L.P., "The Economic Structure of Channels of Distribution," Marketing: A Maturing Discipline, M.T. Bell (ed.), American Marketing Association, Chicago, Illinois, 1960, pp. 379-385.

functions performed within a marketing channel. The criteria Bucklin uses to isolate the relevant functions are:

- a. The activities included in each function must be so related as to make it necessary for some firm to organize and direct the performance of all or none of the activities.
- b. The activities included in each function must have sufficient scope to allow the firm to specialize in them to the exclusion of all others.
- c. The activities included in each function should incur substantial cost.
- d. Each activity undertaken in the marketing channel must be placed in one, and only one, functional category.

On the basis of these criteria Bucklin isolates the following functions:

- a. Transit (T) - All activities required to move goods between two points.
- b. Inventory (I) - All activities required to move goods in and out of storage, sort, and store them.
- c. Search (S) - All activities required to communicate offers to buy, sell, and transfer title.
- d. Persuasion (P) - All activities incurred to influence the beliefs of a buyer or seller.
- e. Production (Pr) - All activities necessary to create a good with any desired set of specifications.

By using this set of functions, Bucklin is able to diagram the structure of most existing channels. The familiar manufacturer, wholesaler, retailer, consumer channel, as an example, may be diagrammed symbolically as:

$$(\text{PrITSP}) \longrightarrow (\text{SITSP}) \longrightarrow (\text{SISP}) \longleftarrow (\text{STI})$$

The manufacturer, wholesaler, retailer, and consumer are designated respectively by the bracketed symbols (PrITSP), (SITSP), (SISP), and (STI), indicating that the manufacturer performs all five marketing functions; the wholesaler performs four but must search twice to contact both manufacturers and retailers; the retailer performs three but must also search twice to maintain liaison with wholesalers and consumers; and the consumer performs three marketing functions when dealing with retailers.

Bucklin's contribution is unique in that it permits rapid dissection of the activities engaged in the channel and, further, designates the functions performed by each agency. His contribution is considered a valuable method of sorting out the channel process and arranging the activities involved in it.

The weaknesses in Bucklin's contribution lie in the facts that he assumes that the "product" is homogeneous at each successive level of output; that the nature of the output can be defined rigorously; that plant capacity can be measured precisely; and that most of the costs incurred by the firm are "production" rather than "selling" costs. These assumptions rarely hold in the real world.

2. McGarry⁸

McGarry lists a number of functions that he calls his "six functions of marketing." They are listed at this stage since they somewhat complement the writings of the preceding author.

- a. The contactual function: the searching out of buyers and sellers. McGarry feels that an elaborate and often unnoticed mechanism is needed to maintain contact between all of the people who use and produce both the items and their components, supplies, and equipment.
- b. The pricing function: in our society, the principal device for allocating our supply of scarce resources.
- c. The merchandising function: the work of gathering information about consumer desires and translating it into practicable product designs.
- d. The propaganda function: the conditioning of the buyers or of the sellers to a favourable attitude toward the product or its sponsor.
- e. Physical distribution: the brute job of transporting and storing goods to create time and place utility.
- f. The termination function: something of a catch-all category that includes both the process of reaching

⁸ McGarry, E.D., "Some Functions of Marketing Reconsidered," Theory in Marketing, Cox, R. and Alderson, W. (eds.), R.D. Irwin Inc., Chicago, Illinois, 1950, pp. 263-279.

agreement in the case of fully negotiated transactions, and all of the contingent liabilities that remain with the seller after delivery takes place.

McGarry's list is more widely applicable than that of Bucklin and, of course, avoids many of the weaknesses found in the latter's work. However, McGarry probably never intended his list to be applied strictly to a listing of functions performed by marketing channels. Yet, because of its wide applicability, the McGarry list might be considered an excellent general framework to utilize when discussing marketing channel functions.

As Hollander⁹ points out, since many of McGarry's functions are concerned with intangibles, probably room will always exist for debate concerning the means used to achieve marketing objectives. The most interesting point that Hollander makes, however, is that these functions might be the real output of marketing.¹⁰

3. Vaile, Grether, and Cox¹¹

The above writers designate the processes that organize agencies into combinations and sequences known as channels to be:

⁹ Hollander, S.C., "Measuring the Cost and Value of Marketing," Marketing and the Behavioral Sciences, P. Bliss (ed), Allyn and Bacon Inc., Boston, Mass., 1963, p. 542.

¹⁰ Page 136, this survey.

¹¹ Vaile, R.S., et al., op. cit., p. 134.

- a. Collecting - The process by which goods available in small lots are brought together into large lots. Thus, there are two forms of collection: collection of large lots of a single good and collection of large assortments of varied goods.
- b. Sorting - Involves the fact that most buyers need to select out of the unsorted mass specific items that fit their requirements. Again, two processes are involved: the sorting of goods into smaller lots, each of which meets certain specifications as to quality; and secondly, if the buyer needs a variety of goods or of grades, his lot must be made up to include the particular assortment he needs.
- c. Dispersing - The process of moving lots closer to possible consuming markets; and the process of dividing the stocks built up through collecting and sorting into very small units.

Unique to the Vaile, Grether, and Cox approach is that it permits one to visualize the marketing process quickly and in fairly simple terms. Further, the approach permits one to think in terms of inputs and outputs, controls, feedbacks, and processes within a well defined and easily understood conceptual framework.

The above approach has been expanded upon by a number of writers, notably Wroe Alderson.

4. Wroe Alderson¹²

Alderson suggests that marketing consists of matching heterogeneous supply and heterogeneous demand. In his view, matching can be divided into three phases of shaping, fitting, and sorting:¹³

- a. Shaping and Fitting - Concerned with the form and specific application of a product.
- b. Sorting - A means of accomplishing effective matching, composed of:
 - (1) Sorting out - the process of grading the heterogeneous production of farms, mines, forests, or factories into homogeneous lots according to established standards.
 - (2) Accumulation - the process of collecting substantial supplies of the homogeneous products which were first sorted out.
 - (3) Allocation - the process of breaking down the previous accumulation of homogeneous supplies into smaller quantities.
 - (4) Assorting - the process of putting together unlike commodities in order to better match consumer or user demand.

¹² Alderson, W., Marketing Behaviour and Executive Action, op. cit., Chapters 7 and 8.

¹³ Ibid., pp. 201-211.

Thus, Alderson has contributed to an understanding of the marketing process by extending the earlier work of Vaile, Grether, and Cox. Like the latter writers, Alderson proposed a method of approaching the complexity of the marketing process that allowed quick discernment and ready categorization of the activities found in marketing. In fact, in a later work,¹⁴ Alderson coins the phrases "transactions" and "transvections" to further clarify his earlier contribution.

Transactions are defined as a product of the double search in which customers are looking for goods and suppliers are looking for customers. A transvection is the unit of action for the system by which a single end product is placed in the hands of the consumer after moving through all the intermediate sorts and transformations from the original raw materials in the state of nature.

The resemblance to Bucklin's work is most striking at this stage in Alderson's theory. The approach is definitely that of systems and the description bears heavy usage of systems terminology. There can be little doubt that Alderson is trying to explain the process element in the marketing system by utilizing activities in a systems sense. Although his approach is functional, Alderson implies that the functions he describes take place within an institutional environment when he states that:

¹⁴ Alderson, W., Dynamic Marketing Behaviour, R.D. Irwin Inc., Homewood, Illinois, 1965, p. 75.

The functionalist approach is concerned with the functioning of systems, and the study of structure is incidental to the analysis and interpretations of functions. Every phase of marketing can be understood within the framework of some operating system. 15

Thus, Alderson's contribution is included here since it fits into the definitions of marketing systems (p. 74) and marketing process, and complements the institutional approach. Institutions do not constitute the marketing process--marketing functions do by acting through institutions.

5. A. W. Shaw

The idea of the functional approach must be credited to Shaw.¹⁶ Shaw's original list of marketing functions appear as follows:¹⁷

- a. Sharing the risk.
- b. Transporting the goods.
- c. Financing the operations.
- d. Communication (sic) of ideas about the goods (selling).
- e. Assembling, assorting, and reshipping.

Shaw associated the performance of these functions solely with middlemen.

¹⁵ Alderson, W., Marketing Behaviour and Executive Action, op. cit., p. 1.

¹⁶ Shaw, A.W., op. cit., p. 703.

¹⁷ Shaw, A.W., An Approach to Business Problems, Harvard University Press, Cambridge, Mass., 1916, p. 371.

No extensive treatment of Shaw will be presented here. It is important to note, however, that although he originated a functional analysis of the marketing process his contribution is otherwise very incomplete, as evidenced by the work of Duddy and Revzan.

6. Duddy and Revzan¹⁸

Duddy and Revzan provide one of the best surveys of the functional approach to marketing and compare the historical Shaw's five functions¹⁹ to Ryan's²⁰ 120 functional elements. However, after surveying the literature, the writers adopt the following list of functions:

- a. Merchandising - That function of marketing which emphasizes the use of strategy by either sellers or buyers (other than the ultimate consumer), or by both working together (in co-ordination), in order to secure the advantages of innovation.²¹
- b. Buying²² - That function of marketing which includes:

¹⁸ Duddy, E. A. and Revzan, D.A., op. cit., p. 21.

¹⁹ Shaw, A.W., loc. cit.

²⁰ Ryan, F.W., "Functional Elements of Market Distribution," Harvard Business Review, July, 1935, pp. 205-224.

²¹ Duddy and Revzan, op. cit., p. 36.

²² Ibid., p. 53.

- (1) Purchases of raw materials and supplies for processing into finished goods by manufacturers; by public and private institutions for consumption; and by the ultimate consumer for personal use.
- (2) Purchases by wholesalers and retailers for resale.
- c. Selling²³ - The function of supplying consumers or users.
- d. Transportation²⁴ - the means by which the physical distribution of goods is accomplished.
- e. Storage²⁵ - The exercise of human foresight by means of which commodities are protected from deterioration and surplus supplies are carried over for future consumption in seasons of scarcity.
- f. Standardization and grading²⁶ - The values attached to the product or the service in terms of its uses and the use of the values for sorting ungraded products into lots that are similar in variety, size, quality, etc.
- g. Financing²⁷ - The function of advancing the goods or services, or of claims on them, and the confidence

²³ Ibid., p. 53.

²⁴ Ibid., p. 55.

²⁵ Ibid., p. 67.

²⁶ Ibid., p. 86.

²⁷ Ibid., p. 88.

that the lender has in the borrower's ability and willingness to repay the loan when it is due.

- h. Communication²⁸ - The use of various means or symbols for conveying information to, or exercising influence over, buyers and sellers.
- i. Risk bearing²⁹ - The assumption of uncertainty in regard to cost, loss, or damage.

The list that Duddy and Revzan provide is difficult to analyze since the authors explicitly state that their list results from surveying the literature. Perhaps, it is the fact that the functions were arrived at through use of surveys that they do not seem to be highly interrelated. Perhaps, it is because of their significant difference from the other functions previously outlined that Duddy and Revzan's functions seem to be unusual. Regardless of what seems to be the "matter" with the list, it is accepted as a useful contribution to understanding the marketing process. The list is comprehensive in the sense that it is a summary of what was written to the time of its inception, it is well-adapted for being fitted to an institutional framework, and it is broad and diverse in its scope.

²⁸ Ibid., p. 104.

²⁹ Ibid., p. 112.

7. R. F. Breyer

"The task of marketing is to get from production to consumption."³⁰

In the sense Breyer uses the term, marketing is primarily a physical function made necessary because of the separation of production and consumption. That separation is the result of specialization in production, and the need for marketing service is a consequence of specialization. Breyer spoke of marketing as the "price" we pay for the advantages of specialization in production and, therefore, as an activity that must be performed if we are to enjoy the benefits of specialization.

Breyer, of course, attempted to view marketing as only one process. His attempt would have to be discounted because it is felt to be incomplete. There are, however, specialized functions in marketing which are felt to fit well to Breyer's very basic approach.

8. Clark and Weld

Clark regarded marketing as the process of concentration, equalization, and dispersion. In collaboration with Weld, he wrote:

To get products from growers into the hands of distant users involves three important isolated processes which may be called concentration, equalization, and dispersion.³¹

³⁰ Breyer, R.F., The Marketing Institution, op. cit., p. 4.

³¹ Clark, F.E. and Weld, L.D.H., Marketing Agricultural Products, McMillan Co., New York, N.Y., 1932, p.13.

Implied in the above concept are both the nature of the market in which the activity takes place and some idea of the significance of the activity. The concept of concentration and dispersion implied that producers and consumers are separated and that marketing is the process of bringing products together from numerous widely scattered sources and of distributing them to many equally widely scattered consumers. Equalization implied that the same process is pertinent to markets separated by time.

As can be seen, Clark and Weld try to group the marketing functions in order to facilitate understanding. Their practice of titling groups of functions as processes is permissible as long as one does not view marketing as a process. As soon as the latter approach is taken, confusion sets in. By using a concept like "groups of functions" or "groups of activities" much potential confusion can be avoided.

C. SUMMARY AND CONCLUSIONS

The possible components of the marketing process have been outlined and defined. It is significant to note the lack of consensus about them and the variances in the approaches taken. Duddy and Revzan and Shaw may be categorized as being in one camp by virtue of their somewhat similar lists of functions. Bucklin and McGarry may be placed in an intermediate camp, and Alderson,

Vaile, Grether, and Cox, and Clark and Weld, placed in yet a third camp.

It is not intended that the reader should understand that Duddy and Revzan propose lists of functions different from those of Alderson or McGarry--or any other theorist--such that the differences are marked. All that is intended by surveying such lists is to demonstrate to the reader how difficult it is to reconcile or sort out the many divergencies noted.

Any one of the lists of functions describing the marketing process may be utilized with probably as much success as any other. The important factor to realize is that the list chosen provides a method of breaking down the marketing process into its component activities so that marketing inputs, outputs, and controls may be applied. The technique is entirely a conceptual one so that comprehension and understanding of marketing channels systems may be facilitated.

It may be somewhat of a disappointment to the reader to find that this study does not attempt to choose a list of "best" functions that describe the marketing process. Some time was devoted to the evolution of such a list but the effort was abandoned because of the difficulties in resolving differences between lists. However, it is felt that some potential lies in the eight lists that have been presented in this chapter. Perhaps, the following common characteristics might be necessary before an "ideal" list of marketing functions could be formed:

1. A checklist of necessary criteria required to evaluate the tentative function of interest. In this study one would hope for a list that avoided reference to a particular firm or type of firm. Rather, generalization would be the goal. Bucklin³² makes a valuable but limited contribution with his list.
2. Emphasis on both physical distribution and the supporting or facilitating activities. Most writers in marketing utilize such an approach.
3. Use of some sort of notational method of describing the systems, either through verbal descriptions, mathematical relationships, or systems models.
4. Universality in application so that the systems envisaged and described would be able to be integrated with the rest of marketing theory.
5. Utilization of both spatial and time dimensions so that some minimal basis might exist for sorting out what is observed or hypothesized.
6. Acceptance of the fact that success might never be attained, for as Alderson notes, about all that it is safe for one to say about marketing channels when describing them is that they are groups of firms which constitute a loose coalition engaged in exploiting joint opportunity in the market.³³

³² Bucklin, L.P., op. cit., p. 381.

³³ Alderson, W., "The Development of Marketing Channels," R.M. Clewett (ed.), Marketing Channels for Manufactured Products, op. cit., p. 38.

CHAPTER VI

INPUT-OUTPUT ANALYSIS IN CHANNEL SYSTEMS

Some tentative inputs and outputs for channel systems are surveyed in this chapter. The term "tentative" is employed for, as Fisk states, there is an input and an output (in marketing systems) which even the best minds thus far cannot fully specify.¹

A. A PERSPECTIVE FROM ECONOMICS

Before surveying the marketing literature regarding inputs and outputs it was felt that a useful perspective might be gained from the discipline of economics.

In traditional economic theory,² various economic resources are transformed by business firms to other forms and

¹ Fisk, G., op. cit.

² Inman, M.K., Economics in a Canadian Setting, Copp-Clark Publishing Co. Ltd., Toronto, Ontario, 1959, p. 473.

and sold to other firms, households, individuals, or the government. The resources purchased by a given firm are inputs and those sold by it are outputs. The transformation of resources does not necessarily involve a change in their outward appearance. Thus, a retailer who buys from a wholesaler and sells to ultimate consumers, transforms (adds utility to) the goods in which he deals; yet, the commodities may retain their size, shape, colour, and texture. Further, an output of one firm may be an input to another. Basic inputs, however, remain as raw materials, labour services, managerial and entrepreneurial abilities, and capital.

Economics views inputs and outputs in an institutional view. This approach permits a valuable framework for marketing. As will be demonstrated, most marketing writers adopt the approach taken by economics.

B. THE CONTRIBUTIONS OF MARKETERS.

The perspective from economics is presented in order for the reader to see how marketing has borrowed from the older discipline. The perspective is important since it frequently reappears in marketing writings.

1. George Fisk³

Fisk contends that we have some reasonably good measures of inputs in channels if we look to the following factors:

- a. Man-hours of labour.
- b. Wages paid.
- c. Investment.
- d. Electrical and other forms of energy consumed.

While Fisk never intended to treat this topic comprehensively, as evident in the brevity of his contribution, one would be forced to concede that his treatment is somewhat superficial. The list, however, serves as a starting point and allows comparison to other lists to be presented.

Noticeably lacking from the Fisk list is the input of managerial and entrepreneurial resources. Perhaps, however, these inputs might be included in man-hours of labour.

Fisk's list of outputs is somewhat more comprehensive. In the list he includes:⁴

- a. Ideas in the form of aspirations and expectations.
- b. Satisfaction derived from consumption.
- c. Sales.
- d. Purchases value added.
- e. Number and tonnage of physical units delivered over channel units of time.

³ Fisk, G., op. cit., p. 209.

⁴ Ibid.,

It was pointed out in the perspective from economics that the resources purchased by a given firm are inputs and those sold by it are outputs. The transformation of resources does not necessarily involve an outward change in their appearance. Fisk has gone beyond these basic premises by making reference to ideas and satisfaction as intangible outputs that do not fit in with what Beckman⁵ and Buzzell⁶ might term "value-added" concepts. (These writers are discussed later in this chapter.) The list, however, is well adapted to marketing despite its departure from more conventional economic theory.

2. Duddy and Revzan⁷

Duddy and Revzan consider inputs to mean economic resources and refer the reader to a list by Engle.⁸ In the writers' eyes inputs refer to all services performed in moving goods from producer to customer. The orientation is, therefore, functional.

This writer would have to reject Duddy and Revzan's contribution somewhat because they fail to specify the possible

⁵ Beckman, T.N., "The Value-Added Concept as a Measure of Output," Advanced Management, April, 1957, pp. 6-8.

⁶ Buzzell, R.D., Value Added by Industrial Distributors and Their Productivity, Bureau of Business Research Monograph No. 96, Columbus, Ohio, 1959.

⁷ Duddy, E.A. and Revzan, D.A., op. cit., p. 562.

⁸ Engle, N.H., "Measurement of Economic and Marketing Efficiency," Journal of Marketing, April, 1941, pp. 335-349.

inputs in marketing. However, their list of functions performed in the marketing process⁹ may also be considered a list of inputs into channels. Since it was found that the functions must, by definition, be considered process components, then no effective list of inputs is felt to be contributed. However, as Hollander¹⁰ states, these functions may be the real output of marketing.

3. Beckman¹¹

Beckman attempts to apply his value-added concept to marketing. His view greatly complements that of Duddy and Revzan in that he feels costs are a measure of input. The approach taken does not involve all four levels of systems complexity outlined since Beckman makes specific reference to the costs of the firm. However, much like Fisk, Beckman identifies the following inputs and implies that they might fall on all four levels of systems complexity since they may be found generally in all distribution systems--not within only particular agencies:

- a. Products shipped or delivered.
- b. Materials.
- c. Supplies.
- d. Containers.
- e. Fuel.

⁹ Refer page 109 this study.

¹⁰ Hollander, S.C., op. cit.

¹¹ Beckman, T.N., op. cit., pp. 6-8.

- f. Electrical energy.
- g. Contract work and labour.

Thus, Beckman proposes a basic list of inputs. His contribution resembles much of what economists have held as basic resources influencing the pricing decision of the firm with the number of items longer than that for economics but generally fitting within the same broad framework.

Like Fisk, Beckman omits mentioning inputs of managerial and entrepreneurial effort. And, like Fisk, Beckman might have inferred that the labour factor includes the latter resources.

Beckman contends that outputs are the value-added factors to the original inputs. Specifically, value-added represents the difference between the selling value of the products shipped or delivered and the cost of materials, supplies, and containers, plus the cost of fuel, purchased electrical energy, and contract work. The difference represents the net value of the operations and is presumed to measure the value-added by the process of manufacture.

If one takes the liberty to assume a broad approach to Beckman's writing, one might assume that value-added is the sum of the differences between the final selling value of the finished product and the total costs less profits of the resources allocated to that product.

The above definition would accrue the following advantages:

- a. It is the best reasonably available absolute measure of the value created in the process of whatever part of the economy is being measured.
- b. Value-added is the best reasonably available relative measure of value created that can be used for proper and fairly accurate comparisons of anything else similarly measured.
- c. Use of the concept helps the viewing of costs in their proper perspective. While costs are a measure of input, value-added is a measure of the output produced by such costs.

Of course, the Beckman approach would infer that one could quantitatively measure value-added. However, if one considers Fisk's list of ideas and satisfactions as outputs, then part of Beckman's hypothesis becomes workable.

4. Wroe Alderson¹²

In Alderson's approach, inputs and outputs are viewed as the terminal points of some process. In a continuous process involving whole sequences of steps, the beginning and ending points of the process can be selected arbitrarily according to the convenience of the analyst, and inputs and outputs defined correspondingly in relation to these terminal points.

¹² Alderson, W., Marketing Behaviour and Executive Action, op. cit., pp. 65-70.

Looking at a complete distribution channel, inputs may be defined as beginning in the manufacturer's warehouse and the final outputs as the goods at the time they are passed into the possession of consumers scattered throughout the country.

According to Alderson¹³ inputs and outputs both involve transactions between an organized behaviour system and its environment. Both inputs and outputs are highly differentiated and are determined both by environmental factors and by factors internal to the system.¹⁴

Every organized behaviour system is selective in what it takes from the environment and also in the outputs that it produces. The acceptance of an intake from the environment involves a variety of risks and assumptions about the continuity of the operation (of the channel). It is assumed that all the materials acquired will eventually be processed and will emerge at the other end as outputs. The inputs are without value except on the basis of this assumption.

From this point, Alderson goes to great lengths to discuss the operation of input-output systems but never once defines specifically what inputs or outputs are nor does he list specific inputs or outputs. Alderson provides, however, an excellent framework within which to view systems.

¹³ Ibid., p. 66.

¹⁴ The treatment of the environmental factors is briefly reviewed in Lazer, W., "The Role of Models in Marketing," Journal of Marketing, as reproduced in Lazer, W. and Kelley, E.J., Managerial Marketing: Perspectives and Viewpoints, op. cit.

According to Alderson, progressive differentiation of products and services is the key to defining the values created by marketing. This approach is based on the assumption that each individual's need is different from every other individual's need in one or more respects. Thus, the basic economic process is the gradual differentiation of goods up to the point at which they pass into the hands of the consumers. Under this concept there is no basic difference in the kind of utility created by production and that created by distribution. Every step along the way consists of shaping a set of materials more and more completely to fit the needs of specific consumers. This step-by-step differentiation of an economic good is the essence of the economic process as recognized by Chamberlain¹⁵ and others. Fitting a product to a need consists of the two phases of shaping and sorting. The first changes the physical character of the goods but does not create any utility in the absence of the other. The second causes the goods to become part of various assortments in the hands of wholesalers, retailers, and consumers. Each assortment exists at a specific time and place.

5. Hollander¹⁶

Hollander takes a broad approach to identifying the inputs and outputs involved in the marketing system that seems to

¹⁵ Chamberlain, N.W., The Firm: Micro-Economic Planning and Action, McGraw-Hill Co. Inc., New York, N.Y., 1962, p. 191.

¹⁶ Hollander, S.C., op. cit., p. 529.

fit the criterion of falling on all four levels of system complexity. He identifies time, effort, and money on the part of consumers as basic inputs and McGarry's six functions as basic outputs.

The writer finds Hollander's contribution to be extremely interesting in that it is both insightful and simple. The great advantage of the Hollander article lies in the ease with which the concepts can be grasped and the seeming completeness in identifying the system inputs and outputs.

However, the writer rejects part of Hollander's argument since functions are explicitly held to mean processes, in this paper. At the risk of creating a grave error in surveying the literature, the writer chooses to categorize McGarry's six functions as process elements (p. 115) and not as system outputs. Perhaps, the meaningful difference between processes and outputs might lie in processes adding utility to the service or product involved and it is the added utility which constitutes the output.

6. Cox, Goodman, and Fichandler¹⁷

This very excellent work treats the topic of marketing inputs and outputs extensively and well. Particular emphasis is placed, as the title implies, on marketing channels of distribution.

¹⁷ Cox, R., Goodman, C.S., and Fichandler, T.C., Distribution in a High-Level Economy, Prentice-Hall, Inc., Englewood Cliffs, New Jersey, 1965.

Cox, Goodman, and Fichandler do not try to establish a list of inputs and outputs in distribution channels. Rather, they survey and evaluate the literature in marketing and related areas; question what distribution is and the functions it performs; examine how good a job distribution does; and attempt to look at distribution's place in the future.

The writer finds this work to be an extremely valuable framework for examining channels of distribution and parts of the book are useful in examining system inputs and outputs.¹⁸

C. SOME RELATED WRITINGS

There are a number of writings in the marketing literature that are strongly related to the topic of this survey but are not strictly applicable. The writer feels that because of their interest in marketing inputs and outputs they should be mentioned. However, due to these writings not strictly fitting the subject matter of this survey because of being too broad in scope or dealing only with marketing costs, only a very cursory glance will be devoted to them.

¹⁸ Particularly Chapters 2, 3, 4, 5, 7, 8, 10, 11, and 12.

1. Stewart and Dewhurst¹⁹

These writers perhaps are pioneers in studying empirically the inputs and outputs of marketing channels. The authors' orientation fits the criterion of dealing with the four levels of systems complexity and attempts to trace the 1929 flow of commodities from original sources to final buyers.

Unfortunately, the study cited is oriented to analyzing and appraising the costs involved without specifying or categorizing what it is that they are attempting to evaluate. Had a list of classifications of inputs and outputs been provided that did more than identify costs, then some more useful data may have been provided.

2. H. Barger²⁰

Barger, like Stewart and Dewhurst, uses a highly similar approach but attempts to deal only with the wholesale and retail segments of marketing channels. Similarly, the same critique may be applied to Barger's study--a noticeable lack of generic classification of inputs and outputs although he did employ the more traditional classifications of land, labour, capital, and entrepreneurship. Some question exists, though,

¹⁹ Stewart, P.W. and Dewhurst, J.F., Does Distribution Cost Too Much?, Twentieth Century Fund, New York, N.Y., 1938.

²⁰ Barger, H., Distribution's Place in the American Economy, Princeton University Press, Princeton, New Jersey, 1955.

as to what Barger contributed to the list of inputs and outputs. After all, his objective was to determine the cost and value of specific channel agencies, not to provide the definitive list of marketing inputs and outputs.

3. Buzzell²¹

Buzzell, much like the others who precede him, attempts to measure statistically and empirically the economic contribution of a selected type of wholesale distributor in terms of the concept of value-added by distribution channels.

4. Waugh and Ogren²²

Waugh and Ogren suggest including farmer's costs for machinery and purchased supplies as necessary cost elements in distribution channel inputs.

As stated, all of the above studies have something to contribute but all are, perhaps, too much involved with costs, units counted, or value-added to specify what inputs and outputs are involved.

²¹ Buzzell, R.D., op. cit.

²² Waugh, F.V. and Ogren, K.E., "An Interpretation of Changes in Agricultural Marketing Costs," American Economic Review, May, 1961.

D. SUMMARY AND CONCLUSIONS

Perhaps it is not necessary to specify what is meant by marketing channel inputs and outputs. Perhaps Alderson has the correct idea in constructing a conceptual framework within which inputs and outputs must be treated. Certainly, all of the writers surveyed in the second section dealing with related writings--Buzzell, Waugh and Ogren, Barger, and Stewart and Dewhurst--felt that a complete listing is not necessary.

This writer feels that Alderson makes the best general contribution to understanding marketing channel inputs and outputs. At no time did he attempt to determine the cost of distribution channels nor justify the existence and structure of them. Yet, the view taken and hypotheses expounded are concise and insightful and it is relatively easy to discern what it is that Alderson is talking about.

Despite Alderson's ability to avoid being "pinned down," this writer feels that some sort of a rough classification of marketing channel inputs and outputs should be established for no other purpose than to classify what it is that is meant by the use of the term "inputs and outputs in channels." The writer proposes the following:

Marketing channel inputs - The energizing or start-up forces that provide any given subsystem within a channel, or the channel system itself, with its operating material.

Marketing channel outputs - The purposes for which marketing channel systems, or subsystems, objects, attributes, and relationships are brought together.

Thus, inputs may take one or more of the following forms:

1. The result of a previous process, in line, serially. This view is held by traditional economic theory wherein the output of one firm is an input for another.
2. The result of a previous process, randomly generated. Thus, changes in the objects, attributes, and relationships with which the system may deal might occur purely on the basis of chance. Changes in demand for fashions resemble chance variation.
3. The result of a process that is being reintroduced. An example may be found in women's fashions where the "fashion cycle" concept appears to apply.

Outputs, on the other hand, are the factors toward which systems and subsystems are organized. Outputs, then, may be used synonymously with the term "objectives."

Since it was indicated that one cannot differentiate between marketing and production costs in a channel of distribution, no attempt will be made to do so. It is argued that ultimately all production costs are represented in the cost of the final product to the ultimate consumer or user. Thus, a list of the inputs and outputs involved might resemble the following:

Tenative Inputs

Man-hours of labour
Wages paid
Investment
Electrical and other forms of
energy consumed
Ideas in forms of aspirations
and expectations
Products shipped or delivered
Containers and packages uti-
lized
Supplies consumed

Tenative Outputs

Ideas in form of aspirations
and expectations
Satisfaction derived from con-
sumption
Sales
Purchases value added
Number and tonnage of physical
units delivered over
time
Profits

CHAPTER VII

THE ROLE SYSTEMS THINKING PLAYS IN MARKETING CHANNELS LITERATURE

SUMMARY AND CONCLUSIONS

A. SUMMARY

The writer has attempted to describe how the application of systems analysis might further understanding of the literature dealing with channels of distribution. Of necessity, a survey approach was required in order to present the current state of the literature, to facilitate a meaningful critique, and to provide a base upon which further elaboration could be constructed.

The treatment cannot be considered to be complete; hence, the orientation to surveying and exploring a representative sample of the literature. Hopefully, the major marketing writers were considered and their contributions evaluated.

The writer finds it interesting to note that most marketing writers employ systems thinking in their writings. Almost all, either explicitly or implicitly, make reference to systems concepts. Perhaps, this ubiquitousness of systems is

to be expected. After all, systems are postulated as a general conceptual device for structuring and understanding ill-structured, complex, and confusing situations.

Probably the greatest value this study will have will be to present the more relevant writings regarding systems in marketing channels in one place. The reader may disagree with those factors which the writer has considered important to systems and to marketing channels but at least a framework is available for criticism. This alone is a contribution of some value because nothing has been done to date to unify the writings that have so far evolved.

One might briefly summarize the marketing literature regarding the usage of systems thinking in marketing channels as being incomplete but showing signs of promise. Although there are a great many irregularities and inconsistencies and despite the fact that there is little consensus as to what comprises the systems concept in marketing, some writers have made some very real contributions.

Basically, the general tone of the evolving literature of systems thinking regarding marketing channels is descriptive. A broad conceptual framework appears to be developing within which the frontiers of marketing knowledge might be advanced--not only regarding channels but also the entire spectra of marketing. Perhaps the situation in marketing is working in the same direction as Boulding observes when he states:

General Systems Theory is the skeleton of science in the sense that it aims to provide a framework or structure of systems on which to hang the flesh and blood of particular disciplines and particular subject matters in an orderly and coherent corpus of knowledge. ¹

Particularly noticeable by their absence are a number of necessary writings in the literature. The writer would list the following as requisites before any comprehensive treatment of marketing channel systems may be made:

1. An extensive and thorough treatment of what is meant by the concepts of systems in marketing, marketing systems, the nature and characteristics of marketing systems, and the components of marketing systems.
2. An integration of marketing models and marketing systems as complementary and, perhaps, identical concepts.
3. A clarification of what is involved in the process, input, and output concepts in marketing systems and a listing of the factors involved.
4. A more completely structured and well-ordered treatment regarding the objects, attributes, and relationships involved in marketing systems.
5. An attempt made to place the quantitative aspects of marketing theory and practice within an explicitly defined systems framework.

Having treated these subjects fully, then potential exists for specialized writings on such areas as channels, trading

¹ Boulding, K.E., op. cit., p. 208.

areas, managerial systems, etc. At the present time no effective conceptual framework exists to relate all the parts in a well-structured whole.

B. CONCLUSION

It would appear to be reasonable to conclude that much of the marketing channels literature utilizes systems concepts incompletely. The factors that would seem to cause this problem are an incompleteness in the use of terms or of understanding the total framework within which systems analysis is postulated; and an absence of any attempt to relate the writings of various authors within some sort of well defined conceptual framework.

As indicated, most marketing writers make at least partial usage of systems thinking. This is to be expected since systems can involve generalization and conceptualization without involving reference to specific topics. As such, the writer found the technique to be extremely valuable in evaluating the literature dealing with marketing channels. The usage of a general systems framework provides an excellent set of benchmarks for evaluation without committing oneself to a particular writer or to a very broad but meaningless set of criteria which the surveyor must use to sort out what it is that he is reading.

A few marketing writers seem aware of the need to order and structure what it is they are involved in explaining. Halbert, Alderson, and Fisk seem to attempt such structuring. Each man makes errors and each seems to have something unique to say: Alderson for his generalizations that define the environment within which systems operate; Fisk for his emphasis on understanding marketing; and Halbert for his attempts to provide some sort of broad structure within which all marketing knowledge exists.

Certainly, this ordering process is recognized by many marketers but caution seems to be exercised. Commitment to the systems approach might exclude all other approaches. If other approaches exist then the opportunity cost of omitting them may prove to be too high to be justified. In any event, systems analysis is a useful technique but should not be considered a panacea for solving all the problems of understanding and evaluating the marketing literature.

The great fault of systems analysis seems to lie in its being open to wide differences in interpretation. Without a consensus as to the content of the method it becomes a difficult task to defend or explain the thinking that is involved. Thus, this writer had to present a highly personal and complex abstract of his interpretation of systems thinking. The degree to which systems thinkers can establish the necessary consensus, logically, will determine the ultimate value of the method.

The writer found that it is entirely possible to apply the systems concept to marketing. The choice of marketing channels as a subject was utilized because of the abundance of writing on the subject and because the channels concept appears to be so central to the development of marketing theory and practice. It is to be hoped that other applications of systems theory to marketing will be made. Clearly, it is possible to make the application.

C. SOME TENTATIVE HYPOTHESES

As in any exploratory study, an effort should be made to construct some hypotheses for more detailed and more rigorous studies that may follow. In order to conform to tradition, the writer proposes some topics that will require research. However, no thought will be made as to whether the hypotheses are testable. The reader's own ingenuity will have to determine whether such hypotheses may be tested.

1. Marketing is a system comprised of inputs, processes, outputs, controls, feedbacks, and restrictions.
2. Within the marketing total system, there are subsystems defined in terms of the interrelationships of their objectives or processes.
3. The attributes of marketing systems and subsystems can be at least partially listed and described.

4. The criterion to employ to determine whether or not all the attributes, relationships, and objects of a system have been considered, is to determine if the system is closed or open.
5. The inputs and outputs of marketing systems can be specified, defined, and listed although with a lack of precision and lack of ability to determine if all the inputs and outputs are included.
6. The application of quantitative methods to marketing will greatly aid development and comprehension of marketing systems.
7. Systems thinking in marketing is the logical next step in the development of marketing as a slowly evolving science.

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