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ABSTRACT

AN APPRAISAL OF THE INFORMATION
SYSTEM IN BEEF MARKETING

by Wayne D. Purcell

The performance of the beef marketing system is increasingly a source of concern. Attention is paid price variability, errors in grading livestock, multiple handling of livestock, and other operational characteristics as indications of inefficient activity. Inability or unwillingness of system participants to adapt to changing conditions, an indication of inefficiency, is evident. Operational decisions, which dictate the nature of the observed performance of the system, are made from such a perspective.

This study evolved from a perceived relation between the availability and nature of information and system performance. In particular, information appears to have bearing on the capacity of any system to adapt, to change, because of its relationship to the degree of uncertainty faced by system participants. Information is the output of some operating communication system. The basic objective of the study is to isolate shortcomings in the communication system in beef marketing.

Marketing activities are interrelated in a technical (input-output) sense, with decisions by entrepreneurs determining the nature of operational interrelations. Pricing processes are fundamental to

such processes. Within this framework, the marketing of beef is conceptualized as a system of communication and evaluated accordingly. Obstacles to effective communication include (1) inadequate provisions for feedback between and among system participants at important points, (2) inadequate means of product description, (3) variable conditions of exchange, and (4) inadequate understanding by system participants of how activity at each level contributes to, and is affected by, the total marketing operation as a system of action. Sole dependence cannot be placed on price as a regulator and coordinator of activity. Price is an important conveyor of information but inadequacies in product description, variable conditions of exchange, and related phenomena may result in price conveying the wrong message.

Market news activities are an integral part of the communication system and potential contributors to more efficient marketing activity. Focusing on exchange activity in fed beef, a questionnaire was sent to reporters in the USDA (Federal-State) Market News Service. Evaluation of the results suggests the contribution of the service would be increased if the service were to (1) make more extensive use of the reporter as a means of feedback, (2) employ indices based on slaughter capacity in the area of concern to indicate demand and supply, (3) investigate means by which similar interpretation of commonly used terms might be assured, and (4) give more attention to the value of reports in decision processes versus increased dissemination. In the wholesale market for beef, drawing on insight from interaction with trade personnel, it is suggested that the USDA and the National Provi-

sioner, Inc. (publisher of the "Yellow Sheet") should (1) indicate volume of trade in their reports, (2) provide the source and destination of shipments in terms of the type of business or operation, and (3) employ terminology which would identify value-related characteristics within federal grade classifications and/or indicate the reasons for price variability within the federal classifications.

All agencies active in the reporting of market news should become better qualified as communicators. Understanding of communication processes is a necessary prerequisite to such qualification. Improved understanding of communication processes would also foster a broader and more productive perspective on the part of researchers and, of course, those engaged in marketing activities. Effectiveness as a system of communication appears to be important to the relative efficiency of the marketing effort in the beef industry, and improvement in the communication system a potential means of improving the efficiency of the marketing effort.

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CHAPTER I

INTRODUCTION

The Current Situation

The marketing of beef is complex. Many operations are required in moving the live animal from the farm or feedlot and converting the animal as raw material to meat products deemed acceptable by buying consumers. Such operations are necessarily interrelated in a technical sense. Decision processes largely determine the nature of operational interrelations. However, decisions of individual participants are often made as if the various activities were independent.

Increasingly, there is concern over the possible implications of such complexity and perceived independence on the productivity of the marketing system as a whole, the system being the composite of activities from production of the finished animal to the sale of meat products at retail. The generic term for such concern is "marketing problems". Williams and Stout suggest the following:[1]

> (M)arketing problems can be defined in terms of the rapidity and effectiveness with which required adjustments are made both in the short run and the long run. These problems arise largely because some firm, some segment of the industry, or the industry as a whole (1) failed to recognize change as it appeared, (2) failed properly to evaluate or estimate the impacts of emerging change on the firm, segment, or industry under consideration, or (3) failed to make the necessary adjustments or "dragged its feet" in doing so.

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[1]Willard F. Williams and Thomas T. Stout, Economics of the Livestock Meat Industry (New York: The MacMillan Company, 1964), pp. 126-27.

The authors are referring to market performance in a changing environment. Such shortcomings might also be said to arise from lack of perception concerning the technically related nature of system activities and/or a decision format which either delays the entrepreneur's decision to adjust or evolves a negative decision concerning advisability of adjustment.

From this environment has arisen an organizational structure and an operational procedure which would lead few to characterize the beef marketing system as efficient.[1] Observations concerning system performance run the gamut from generalities on adjustment to more specific phenomena such as price variability. Concerning the latter, Williams and Stout comment that "a distinctively striking thing about the livestock and meat industry is the rather general lack of information and knowledge on prices and the absence of precision with which livestock and meat are described and priced."[2] Hopkin and Kramer speak of price variability as an important risk in the feeding of cattle.[3] DeGraff suggests that "an outstanding characteristic of the cattle business has been a repeated pattern of boom and bust coinciding with the ups and downs of the cattle cycle."[4] Not only is there price

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[1] The term "efficiency" is viewed as encompassing more than a measure of the products and services provided from a given resource expenditure. In particular, the capacity and willingness of the system to adapt to changing conditions and/or needs is considered to be a relevant criterion of efficiency, especially when reference is to a composite of related activities.

[2] Ibid., p. 562.

[3] John A. Hopkin and Robert C. Kramer, Cattle Feeding in California (Bank of America N.T. and S.A., January, 1965), pp. 48-51.

[4] Herrell DeGraff, Beef Production and Distribution (Norman, Oklahoma: University of Oklahoma Press, 1960), p. 215.

variability of a cyclical nature, but also within a shorter time period such as a particular market session. Breimyer, directing his thoughts to pricing processes at a low level of aggregation, points to the indeterminateness of price negotiations between individual buyer and seller. He adds that "over-trust in the workings of the price-determining mechanism has dimmed interest in examining the actual performance of pricing in individual sales."[1] In a research effort restricted to a single market area, Williams and Uvacek observed the following source of inefficiency in the pricing and distribution of beef:[2]

> Considerable uncertainty at all levels of the market, lack of appropriate cost accounts at the packer level, and lack of marketing information on supplies, prices, and supply requirements result in inefficient pricing and poor dissemination of information vital to cost-reducing decisions. In addition, these factors prevent producers and marketing firms at the various levels of the marketing system from coordinating their efforts through the normal operation of the system.

Appraisal of data from other studies gives indications of the relative efficiency of the "current" marketing system. During the period 1955-59, cattle and calves for slaughter were sold on the average 1.36 times per head in the North Central Region.[3] Such multiple

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[1] Harold F. Breimyer, "On Price Determination and Aggregate Price Theory," Journal of Farm Economics, Vol. XXXIX (August, 1957), p. 683.

[2] Willard F. Williams and Edward Uvacek, Pricing and Competition on Beef in Los Angeles, Marketing Research Report No. 413, U.S. Department of Agriculture (Washington: U.S. Government Printing Office, 1960), p. 5.

[3] Richard R. Newberg, Livestock Marketing North Central Region: II. Channels Through Which Livestock Move From Farm to Final Destination, North Central Regional Research Publication 141 (Wooster, Ohio: Ohio Agricultural Experiment Station, April, 1963), p. 24. As noted by the author, marketing agencies in the North Central Region handle some livestock from other regions. Thus, the 1.36 will slightly overstate the actual extent of multiple handling.

handling constitutes a cost to the industry and to society. Yet, given the organizational structure which prevails and the institutionalized arrangements that structure entails, change will not come quickly.

Anthony and Motes, writing from a viewpoint of change and pressures for change, reach the following conclusion:[1]

> In spite of the many changes and the impressive areas of progress in the livestock-meat industry, there has been little change since Biblical days in the way most livestock are bought and sold. Buyers and sellers of slaughter livestock argue about quality and the yield of lean meat in ways not very different from those used in ancient times.

These points from selected references are indicative of the current situation in the beef marketing system. Other references depict similar characteristics and/or problem areas. Typically, however, all observations involve one or some combination of the following points:

1. The beef marketing system is characterized by an organizational structure and operational procedure within which costly and inefficient practices are commonplace. Multiple and excessive handling of livestock, price variability at seasonal and cyclical levels, subjective or incomplete methods of product appraisal and description, and institutionalized procedures as blocks to operational procedures which offer potential of improvement are typical, more specific, observations.

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[1]Willis E. Anthony and William C. Motes, "Livestock Marketing," Chapter 10, Agricultural Markets in Change, Agricultural Economic Report No. 95, U.S. Department of Agriculture (Washington: U.S. Government Printing Office, 1966), p. 292.

2. Increased complexity, characterized by specialization by function and separation of the seats of decision processes, complicate the system and inhibit inherent equilibrating and stabilizing forces.
3. In an increasingly complex operating environment, decision makers have need of more extensive, more complete, and more detailed information concerning the forces within and surrounding that environment.

To identify such facets, especially in the absence of supporting analyses, is neither highly productive nor informative. However, such identification does facilitate the establishment of a perspective within which the problem of concern can be developed.

The Problem

Perusal of the available literature suggests two basic areas of interest in appraising the relative efficiency of the beef marketing system. First, there is concern over the effectiveness with which the system operates within the present structure. Second, there is concern over whether the prevailing structure is optimal. The two are related in that the prevailing structure tends to dictate a method of operation and thus have indirect bearing on the effectiveness of operation. In turn, the nature and relative effectiveness of a mode of operation affects change, and the likelihood of change, in organizational structure.

The area of concern exhibits such dimensions. There are important inefficiencies in the way the system operates within the prevailing organizational structure. Not the least of these, as suggested in the remarks concerning the current situation, is the selling of livestock and meat. Sales are characterized by subjective procedure,

are situation oriented, and are often made on a non-recourse basis where the seller is concerned. The prevailing organizational structure makes such procedures possible, dictates them to an extent.

Merely noting deficiencies does not constitute satisfactory problem delineation. There are causal factors where the deficiencies are concerned. If such causal factors have been isolated by previous analyses or may be isolated a priori on theoretical grounds, the problem is clear--to find ways of removing such causal factors or decreasing their impact. Another situation, differing only in degree, emerges when the causal factors have not been isolated specifically or when they cannot be firmly established a priori on theoretical grounds. Here, the problem pivots on the need for isolation of the causal factors.

There are many factors which contribute to observed inefficiencies in the marketing of beef. All, however, tend to have common base in the decision processes of the entrepreneurs who direct the various activities. These decisions, in conjunction with the perspectives from which they emerge, are important determinants of the effectiveness of operation and are the root of any pressure to change prevailing organizational structures. Since decision processes employ information as a necessary input, the informational base upon which decisions are made bears examination in search of the causal factors.

The problem entails a search for shortcomings in the informational system in beef marketing. Such shortcomings have potential of becoming the causal factors of interest, given the relation between decision processes and system structure and performance. The search is to be conducted under the presumption that inadequate information and resultant uncertainty will necessarily restrain attained levels of

organizational and operational efficiency. The implications of uncertainty arising from limited information and understanding are well established in the literature, both theoretically and empirically, and need not be belabored here.

The problem can be informatively viewed as a working hypothesis. Constituting a basis are observed inefficiencies in the marketing of beef and the perception of relation between such inefficiencies and shortcomings in the information system. Beyond this, and tending toward the status of hypothetical tenets, other requirements of a working base must be met. First, for improvement to be possible even if inadequacies in available information appear to be causal factors, there must be ways of improving the information system. Given the advances in communication technology and understanding of the communication processes by which information is originated and transmitted, this criterion seems to have been met. Second, and directly related, there must be means by which the important shortcomings can be isolated. Such isolation is the nucleus of the problem. Procedure will need be developed as part of the problem. Again, advances in technology and level of understanding concerning communicative processes suggests this need can be met. The degree of success in solving the problem will be at least partially determined by the extent to which an operational information system can be identified and its shortcomings isolated.

Review of Literature

A search of the available literature revealed no systematic attempt to isolate shortcomings in the information system as possible

causal factors of beef marketing inefficiencies. Thus, the literature deemed pertinent for review purposes is that which has meaningful relation to the problem under consideration. This body of literature can be divided into two classes. First are those efforts which have contributed to the understanding of the importance of information to efficient marketing processes. Second are those efforts which have examined some segment of the information system but which, unfortunately, have failed to relate findings to decision processes and thus to system performance. Due to the number of efforts in each class, the review will be selective. The important approaches will be considered and the review will be exhaustive only in this sense.

In the first class, the 1954 report of the National Marketing Workshop stands out.[1] This report, concerned solely with market information, brings together a wealth of insight concerning the marketing process. O. V. Wells suggests the purpose of market information is to facilitate attainment of market conditions closer to the ideal of a "free enterprise" model. He emphasizes the importance of dealing with informational needs in a nonstatic format. John A. Winfield stresses the need for accuracy, representativeness, and speed in the reporting of market developments. Stanley Andrews speaks of the need for specificity, for nonambiguous terminology, and of the problem of apathetic mass media coverage. K. J. McCallister emphasizes the need for reporting of quality in conjunction with price if the marketing system is to provide the price incentives needed to guide production.

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[1] U.S. Department of Agriculture Cooperating with Land Grant Colleges, Market Information, A Report of the National Marketing Workshop, Cornell University, August 26-September 3, 1954.

Work Group VI, with C. D. Schoolcraft as leader, discusses the problem of emphasizing reporting terminal market activity and how this affects sales transactions away from terminals as the terminal declines in relative importance.

McCallister, in another reference, discusses criteria which must be met if free private enterprise is to be most effective in directing marketing.[1] They are: (1) all buyers and sellers must be equally and adequately informed; (2) there must be honesty in market dealing; and (3) there must be prompt, intelligent response to changing market conditions. He suggests market news[2] contribute to the first criteria by making information available to both buyer and seller, to the second because U.S. Department of Agriculture (USDA) reports are publicly available and thus decrease the likelihood of either party to the transaction taking advantage of the other, and to the third by

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[1]Kenneth J. McCallister, "The Role of Market News In Marketing and Some Problems," Journal of Farm Economics, Vol. XXXII (November, 1950), pp. 958-68. The necessity of the first criteria is questionable. Effective pricing processes may be possible if all buyers are adequately and about equally well informed, and similarly for sellers. Equal information will seldom be economically feasible for buyers and sellers in an organizational structure in which sellers vastly outnumber buyers (which is often true in agriculture), or vice versa. What should be avoided is marked dispersion in the informed state among buyers or sellers, and marked differences between the informed states of the two composite groups.

[2]The "market news" McCallister refers to is the reporting activity of the Federal-State Market News Service, a cooperative effort between the U.S. Department of Agriculture and the states, in collecting and disseminating price and related information on a daily and weekly basis. Because federal efforts predominate, this service will be referred to as a reporting service of the U.S. Department of Agriculture.

providing timely, reliable information to those making the marketing decisions. McCallister goes on to say that market news provides means of reducing marketing costs by (1) reducing uncertainty, (2) reducing the physical handling and the time required to move products into consumption, and (3) by maintaining a constant pressure of enlightened competition on all individuals involved in marketing.

Grange, in speaking of "market intelligence", suggests uniform and reliable market information often eliminates need for haggling over each individual lot, speeding the marketing process.[1]

Williams and Stout comment as follows concerning the role of market information in determining marketing system performance:[2]

> Performance of an economic system is determined basically by the decisions made by producing and marketing firms. In the process of change and adjustment . . . prompt, intelligent responses to changing market conditions are required. Slow or inexact responses and poor performance can be expected under conditions in which decisions are made in the absence of relevant facts or by men unable to interpret facts with which they are provided.

This excerpt summarizes well why marketing information is basic to efficient marketing processes.

In that body of literature which evaluates some part of the information system, a recent effort by Nelson is characteristic.[3] The feed grain and livestock industries of the Southwest were analyzed to (1) determine the media used by each group, (2) evaluate the media, (3) determine areas where additional information is needed, and (4) to determine attitudes of users toward currently

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[1] George R. Grange, "Market Intelligence," Agricultural Marketing, Vol. VIII (May, 1963), pp. 19-21.

[2] Williams and Stout, op.cit., pp. 445-46.

[3] Paul E. Nelson, Jr., Market News Dissemination in the Southwest, Agricultural Economic Report No. 71, U.S. Department of Agriculture (Washington: U.S. Government Printing Office, April, 1965).

available market information and the related means of dissemination. The analysis revealed that only 31 percent of all producers were aware of the extent to which mass media coverage relies upon USDA reports. In evaluating the need for further information and/or the effectiveness of that available, the respondents were asked to report their opinions. Most producers favored current methods and procedure with recommendations typically being for more detail or more interpretation of reports. No alternative to the prevailing situation was offered for consideration by the respondents, nor was any attempt made to evaluate the extent to which received information contributed directly to the informational base upon which decisions were being made. The replies from producers were interpreted as a strong vote of confidence for the prevailing system. Of 183 producers who expressed an opinion, 164 wished the USDA to continue the prevailing program without major alterations.

Livestock tradesmen were more critical, a simple majority rating the USDA's reports unsatisfactory with regard to timeliness, clearness, and applicability. None of these three attributes were rated unsatisfactory by more than 2.5 percent of all producers (livestock and feed grain producers combined).

Many of the other evaluatory efforts concerning the information system, usually that segment dealing with the reporting of market news, are situation oriented. Stubblefield examined the situation in Arizona and suggested that terminal reports, since most Arizona cattle are sold direct, are not sufficient.[1] Earlier, he established the

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[1] Thomas M. Stubblefield, Evaluation of Livestock Market News in Arizona, Agricultural Experiment Station Report No. 153 (Tucson, Arizona: Arizona Agricultural Experiment Station, 1957).

need for a regular reporting service based on the volume of cattle sold in the state.[1]

Graybill examined conditions in the Southeast concerning the adequacy of information upon which marketing participants might base their decisions.[2] He found that producers in particular gathered information from many sources. Yet, producers were unable to grade and price their livestock accurately relative to what the animals actually commanded in the market place. Among indicated needs were outlook information, a program of grading instruction, more complete and understandable reports on market activity, and more information on the buying and selling practices of meat packers.

Such efforts typify attempts to evaluate some aspect of the information system in beef marketing. They provide useful information, indicating the need for more extensive reporting, more detail, and/or a change in emphasis in reporting various methods of selling. However, little effort has been made to examine the proficiency of the currently used information system relative to other systems from an operational viewpoint. Such an appraisal would require examination of the capacity of the current system to provide the information most needed by decision makers operating in an uncertain environment. The available literature must be considered deficient in this respect. Regardless of the amount of refinement, extension, or attention to detail, progress

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[1]Thomas M. Stubblefield, The Need for a Livestock Market News Service in Arizona, Agricultural Experiment Station Report No. 128 (Tucson, Arizona: Arizona Agricultural Experiment Station, 1956).

[2]Albert W. Graybill, Marketing Practices and Use of Market Information by Livestock Producers and Meat Packers in the Southern Region, Bulletin 67 (Southern Cooperative Series, June, 1959).

will be insignificant if the system is characterized by operational deficiencies or incorrect perception of need.

No further comment will be made concerning the available literature. The references noted are representative. A more exhaustive listing will be provided in the Bibliography, many of which will be referred to as the study progresses.

Objectives

The objectives of the study are as follows:

1. To develop a conceptual basis for examining the beef marketing system in search of attributes which decrease its capacity to inform system participants by restraining the effectiveness of the system as a system of communication.
2. To isolate those attributes which act as restraining influences on the communicative capacity of the beef marketing system and relate them to observed inefficiencies in the marketing of beef.
3. To appraise the relative effectiveness of market news activities as contributors to the information available to those engaged in the marketing of beef and the communicative capacity of the system as a whole.
4. To indicate changes in the beef marketing system and related services such as market news which would, if feasible, improve the communicative capacity of the system and consequently promote development of an

organizational structure and operational procedure more conducive to efficient marketing processes.

Method of Appraisal

The Scope

The relative effectiveness of any appraisal pivots on the methodological format which is developed and/or adopted. A consistent and systematic approach must be developed and the scope of the appraisal kept within tenable bounds. Both must be accomplished in light of the established objectives and can scarcely be independent of those objectives.

Economists interested in marketing problems are adopting a new perspective of the marketing process, a perspective emphasizing the systematic nature of marketing. Alderson depicts a market as an ecological system. He suggests that in an ecological system, components are not associated in a merely random fashion (as in an atomistic system), nor are they rigidly connected with each other (as in a mechanical system). Instead, there is a tendency for each component to occupy a certain status or position in relation to the others. This means that each component will react most frequently with other components which lie adjacent to it either physically <u>or in relation to the flow of process within the system</u>.[1] Based on this perspective, Alderson champions an approach to appraisal which he labels "functionalism." Such an approach "begins by identifying some system of

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[1]Wroe Alderson, <u>Marketing Behavior and Executive Action</u> (Homewood, Illinois: Richard D. Irwin, Inc., 1957), p. 29. Emphasis added.

action, and then tries to determine how and why it works as it does."[1]

The apparent simplicity of the task of identifying the system of action is deceiving. Seldom will it prove feasible to treat a total system of action with all its parts and ramifications. Appraisal typically requires some degree of abstraction, and if that abstraction is not carefully considered and completed, the validity and productivity of the entire effort may be threatened. Forrester suggests that only consideration of the total system can yield correct conclusions, that anything less is likely to evolve incorrect answers or conclusions.[2] C. West Churchman reaches a similar position. In a management orientation, he suggests breaking a total system of action to subsystems usually means ignoring joint relations of sufficient importance to negate the effectiveness of any independent appraisals of the smaller "systems." Churchman adds that a total system cannot be divided to subsystems unless an equally clear separation can be made among the information flows which are essential to the viability of the subsystems.[3] Consideration of such constraining remarks suggests two safeguards should be employed in abstracting from the total system. First, the abstraction should be identified and any possible implications considered. Second, the "boundary" placements should be made

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[1] Ibid., p. 16.

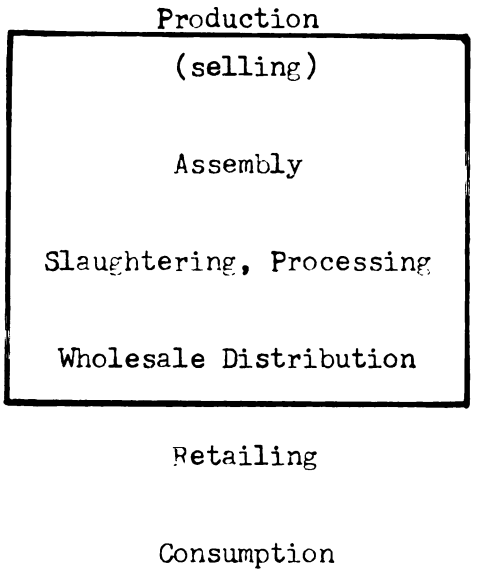
[2] Jay W. Forrester, Industrial Dynamics (Cambridge, Massachusetts: MIT Press, 1961).

[3] C. West Churchman, Prediction and Optimal Decision (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1961).

in such a manner that the restricted system possess the important attributes of a complete system of action.

The restricted system is depicted in Figure I-1. In the more

Fig. I-1.--The Restricted System



specific parts of the appraisal, the "system" will be considered as beginning with the selling decisions of producers and ending with the pricing and distribution of the product at the wholesale level. Where conceptualization in general terms is the aim, it will often be feasible to treat the system in its entirety and production, retailing, and consumption activities will be brought within the confines of the discussion.

The more important abstractions involved in establishing the "restricted system" are as follows:

1. The retail and consumer levels of activity, the retail-consumer complex, will not be considered in detail.

2. Competing products such as pork will be considered only in tracing the development of the beef marketing system.
3. Production processes and decisions relating to production will not be considered in detail, nor will the closely related and complementary feed-grain industry.
4. Emphasis will be on the fed beef sector of the beef industry which means the feeder-stocker segment will be given only indirect attention.

The implications of such limitations are a function of (1) the closeness of relationship[1] between omitted activities and those to be considered, (2) the scope and nature of the appraisal, and (3) the specific attributes of the activities which are to be considered. Churchman's point concerning the separation of information flows becomes most relevant. Can the information flows for the restricted system be operationally separated from those of the total system?

If the restrictions imposed by the abstractions are to be tenable, and if any separation of information flows is to be operational, at least the following conditions must be met. If consistently violated, damaging implications of the abstraction(s) would emerge. The conditions are:

1. The wholesale market is an effective reflector of information from the retailer-consumer complex.

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[1] This "closeness of relationship" is intended to indicate the relationship insofar as informational requirements for decision processes are concerned. Pork and beef, for example, are obviously and closely related in the demand and supply sense as is indicated by cross elasticity coefficients.

This means the retail segment must be capable of interpreting consumer preferences and needs and accurately reflecting them through their buying activities in the wholesale market.

2. The information needed for effective decisions in pricing fed beef and moving it through the various channels and stages of preparation to the wholesale market is not a function of the conditions in competing activities such as pork production and distribution or complementary activities such as those of the feed grain industry.
3. The criteria employed by producers in selling finished, slaughter livestock are not strongly affected by their decisions on feeder cattle placement and production. This suggests selling decisions, once the cattle are finished, are largely independent of previous decisions on placement and production practices.
4. Deviation from the typical pattern of activities, the pattern indicated in Figure I-1, are not of sufficient magnitude and of such a nature as to change basic information requirements.

Regarding the first condition, there is increasing recognition that activities at the wholesale level are conducted within a better informed environment than at any other point in the total system.

Williams and Stout comment as follows:[1]

> It is here (at wholesale), frequently, that information on supply and demand is available in largest quantity and that buyers and sellers are best and most uniformly informed.

Similarly, DeGraff suggests:[2]

> If there is one point more significant in price making than any other in the whole chain of cattle and beef marketing, the weight of evidence is that it is the wholesale market for dressed beef.

At a later point, DeGraff adds:[3]

> In today's marketing system, it is at wholesale that well-informed retailers reflecting consumer demand and well-informed packers reflecting wholesale supplies come together in what now appears to be the most effective single bargaining point in the whole sequence of market transactions.

Combining these points with increasing buying on a specification basis as an indication that retailers are aware of the types of meat consumers will buy, there seems to be sufficient justification for accepting the condition. Retailers appear to be relatively effective in reflecting consumer preferences, insofar as they can be identified, in the wholesale market.[4]

Condition two seems readily acceptable. The situation in competing and complementary areas of activity affects farm organization and enterprise selection, but not selling decisions. The exception

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[1] Williams and Stout, op.cit., p. 566.

[2] DeGraff, op.cit., p. 159.

[3] Ibid., p. 203.

[4] See, for example, Ibid., p. 183; Williams and Stout, op.cit., p. 421ff.; Williams and Uvacek, op.cit., p. 26ff.

would be sales at early ages and/or low weights due to increasing feed prices or feed shortages. Such are exceptional circumstances since feed prices and/or feed supply would seldom change markedly between the times feeder cattle are placed and finished cattle are sold.

Similar comments apply to the third condition. Placement and production practices might affect selling decisions if efforts are made to increase turnover per year, etc. If this occurs, the selling decision is made within self-imposed time constraints, but on essentially the same criteria and with similar informational needs as would prevail without the constraints.

Condition four also appears to be tenable. If, for example, a packer or processor sells directly to retail versus going through a wholesale facility, essentially the same types of information are required. A similar situation prevails for the producer who bypasses organized assembly facilities. Information on alternative ways of selling is always desirable, and direct movement is one of the alternatives. Information on shrink, grade, etc. might be required to establish terms of sale. However, the progressive producer desires such information when selling through an organized assembly facility.

The implications of the abstraction do not seem overly damaging. This suggests that the restricted system meets the more important requirements of a complete system of action.

Optner discusses the various characteristics of what he terms an unstructured system of action. The important characteristics are (1) inputs which are variable or characterized by many disturbances, (2) output which is unpredictable or which could be characterized as

statistically unstable, (3) a processor which is either man or man-machine, (4) control of the system and its operation and which, in an unstructured system, shows a wide range of reliability, and (5) feedback which, in an unstructured system, typically involves a situation in which output--or bits of information concerning output--are not automatically reintroduced to improve performance.[1] The delineated or "restricted" system exhibits all these characteristics. By adopting a perspective which views the finished animal as input and the cut of meat moving through the wholesale level as output, the "system" is complete. The existence of these characteristics will become clear as the appraisal progresses, and need not be discussed here. Note that Optner's unstructured system provides a framework within which Alderson's ecological system of action might operate.

More general support for the abstractions as a whole could be mustered. The information system in the fed beef sector of the livestock industry is not unlike the systems in the pork and sheep sectors. Appraisal of the one constitutes at least a basis for appraisal of the others. In addition, the fed beef sector is the most important sector of the beef industry, and is becoming even more dominant. Finally, limiting the appraisal to the fed beef sector is essential to permit the desired concentration of effort and attention.

Procedure

The overall procedure to be adopted is considered to be somewhat unique. Communication theory, as the basic tool and means of appraisal,

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[1] Stanford L. Optner, Systems Analysis for Business Management (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1960), p. 8.

will be employed to examine the established system of action. If the marketing system can be viewed as a system of communication, the kit of tools developed by students of the communication process will be available as evaluative criteria.

The appraisal is to be conducted at two levels--the general and the specific. Efforts at the more general of the two levels will be culminated in a conceptualization of the beef marketing process in terms of communication processes. In establishing a basis for such a conceptualization, the activities inherent to the beef marketing system will be presented as a system of action. Interrelations between and among the various levels of activity will be stressed. Attention will be given the current organizational structure of the system, including the present procedures for the sale and distribution of the beef animal and meat products. Also included will be discussion of the development of the market news and grading services, grading being included due to its importance as an input to reports of market activity. Recent developments in these two services and the organizational structure of the system as a whole will be revealed along with the forces which have fostered such developments. Overall, this descriptive effort will be designed to inform concerning the current operations of the beef marketing system, to delineate the important interrelations, and to unveil the forces which have either fostered change or constituted impediments to change.

Following examination of the beef marketing system, the communication process will be discussed. Various models of the process will be examined and a model developed to depict the basic attributes of

the communication process. Considerable attention will be given, once sufficient insight is gained, to development of the requirements of effective communication processes.

With a basis established, the marketing of beef animals and meat products will be conceptualized in terms of communication processes. The total information system in beef marketing will be examined on the strength of the established criteria of proficiency for communication systems. Commensurate with the stated objectives, the conceptualization will be employed to isolate general and conceptual shortcomings in the beef marketing system as a system of communication.

The completed conceptualization will be employed in directing appraisal of certain aspects of the system. Those aspects of the system which seem to offer potential of improvement and/or which occupy strategic positions in the system will be examined in more detail. In addition to providing direction, the conceptualization will be used to guide evaluation and provide criteria for such evaluation. On the basis of preliminary examination, the more detailed appraisal is likely to focus on the offerings of the various market news services and in necessary relation, the needs of decision makers as receivers of information. The services will be examined for proficiency as communication systems and as contributors to the overall information system in beef marketing.

Insight concerning the operation of the current beef marketing system and needs of system participants will constitute an important criterion of appraisal. Available literature in the fields of marketing and communication will provide a basis to that insight. In the more detailed phases of the appraisal, questionnaires and informal

interview techniques will be employed to provide needed depth of understanding. Developed insight will then be employed in conjunction with directives from communication theory to isolate those attributes of the total system of action which become impediments to informational flows necessary for efficient system operation. Beyond this, those same criteria will be combined with developed awareness of alternative possible procedures to permit recommendations or suggestions concerning needed changes. When the appraisal has not provided sufficient basis to make such recommendations, any procedure which might be helpful in establishing such a basis will be suggested and briefly delineated. The combination of evaluation, recommendation, and suggested procedure should suffice as the establishment of a base, a beginning, in efforts to improve the marketing of fed beef by improving its level of attainment as an effective communication system.

A caution concerning what is to be considered effective communication is in order. The capacity to achieve a desired response is often used as a measure of effectiveness. Such a criterion, even when responses are viewed as including learning, adaptation, etc., is not adequate in a system with economic connotations. The costs of communication processes must be related to the possible benefits and a decision made concerning economic feasibility. Any change in a communication system can be labeled effective only if the value of "responses" such as increased coordination[1] of effort, more efficient performance of

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[1] The term "coordination" is employed as indicative of joint effort on the part of system participants toward optimizing operations relative to (1) overall objectives of the beef marketing system, and (2) the directives for action provided by the technical interrelations between and among the various levels of activity.

services, etc. is equal to or greater than the costs associated with change. In a complex system, these values and costs are not always readily apparent.

A necessary prerequisite to consideration of the economic feasibility of change is isolation of those areas most worthy of consideration, and some indication of the needed direction of change. This is a basic objective of this study. Not unrelated, however, and perhaps equally important, the approach being taken should foster a perspective which facilitates more complete recognition of the costs and possible benefits which might accrue from a new emphasis or change in direction of effort. The cost-benefit dimensions of the problem will not be given exhaustive attention. When preoccupation with the communication process is evident, the economic feasibility of any suggested changes or implications should be given careful attention and consideration.

Obviously, the appraisal is not to be highly analytical. Such an approach scarcely needs defending, for it is not without precedent and support. Buchanan states his position rather firmly in the following remarks:[1]

> A market is not competitive by assumption or construction. A market becomes competitive, and competitive rules come to be established as institutions emerge to place limits on individual behavior patterns. It is this becoming process, brought about by the continuous pressure of human behavior in exchange, that is the central part of our discipline, not the dry-rot of postulated perfection.

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[1] James M. Buchanan, "What Should Economists Do?", The Southern Economics Journal, Vol. XXX (January, 1964), p. 218.

Economist Buchanan might applaud efforts to deal with the behavior of a system, to examine the processes therein. Lynd, writing in 1939, warned against investigation of only those problems for which "good" (statistical, etc.) methods are available.[1]

Much of the opposition to the descriptive research effort arises from differing opinions as to what the descriptive effort involves. Bressler suggests that the noncumulative nature of much of the research (in Agricultural Economics) is due at least partially to "the constant repetition of preliminary and descriptive phases of the work, with little or no follow-up into the promised sequence of analysis and synthesis."[2] Jahoda et.al. define a descriptive study as one oriented toward finding out what is occurring as opposed to diagnostic study which tries to discover why and what can be done about it.[3] Handy, on the other hand, goes to some length to suggest that the descriptive study is seldom the mere classification it is often pictured as being. He feels description typically involves explanation and that the two are often inseparable.[4]

In view of the various interpretations as to what the descriptive effort entails, perhaps the advice offered by Paarlberg is useful. He suggests that "the criterion for the choice of method be its

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[1] Robert S. Lynd, Knowledge for What? (Princeton, New Jersey: Princeton University Press, 1939), pp. 16-18.

[2] R. G. Bressler, "Agricultural Economics in Decade Ahead," Journal of Farm Economics, Vol. XLVII (August, 1965), pp. 525-26.

[3] M. Jahoda, M. Deutsch, and S. W. Cook, Research Methods in Social Relations (New York: The Dryden Press, 1951), p. 54.

[4] Rollo Handy, Methodology of the Behavioral Sciences: Problems and Controversies (Springfield, Illinois: Charles C. Thomas, 1964), pp. 114-18.

usefulness in solving the problem, not the degree of its sophistication, nor the date it was first used, nor its adaptability to the electronic computer."[1] The method which has been developed here is closely related to the problem and to the stated objectives. Whatever it might be called, it seems irrefutable that relationships must be established or realized before they can be quantified, that deficiencies must be isolated before they might be offset. If effective work is done in this area of establishment and isolation, later application of more analytical and "sophisticated" procedures will be more productive.

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[1] Don Paarlberg, "Methodology For What?", Journal of Farm Economics, Vol. XLV (December, 1963), p. 1388.

CHAPTER II

THE BEEF MARKETING SYSTEM

Introduction

The marketing of beef begins with decisions on production procedure by the livestock producer and ends with the purchase of a finished cut of meat by the consumer. This chapter is designed to develop insight and understanding concerning the activities involved in completing this process.

Marketing will be viewed as a system of action. Interrelations and interactions will be considered. A brief look at the historical development and evolution of the system will be followed by a review of recent developments. Finally, the system as it presently exists and operates will be examined. Overall, the purpose is to portray the structure of the system, establish the role of the various participants, examine the factors affecting performance of those roles, and isolate forces which have evolved new structures, new roles, or new features affecting performance.

Historical Review[1]

The review will be in terms of production, assembly, packing, wholesaling, retailing, and consumption activities and spanning all of these, market news and grading as the more important of the supporting services.

As early as 1850, the forces which have evolved a complex and spatially divergent production pattern were making themselves felt. Population increased in the East and livestock production began to shift away from the pattern involving production and slaughter on the home farm. An increasingly urbanized population emerged and production increased as the grazing areas of the West and the concentrate producing areas of the Midwest and North Central regions turned to conversion of roughages to meat.

The dispersed patterns of production which developed would have been impossible had there not developed a means of assembling the livestock preparatory to processing for shipment to the population centers. The terminal or central market developed with the changing locations and patterns of production. By 1850, terminal markets were

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[1] This section draws heavily on the following references:

A. A. Dowell and Knute Bjorka, Livestock Marketing (New York: McGraw-Hill Book Company, 1941).

Edward A. Duddy and David A. Revzan, "The Changing Relative Importance of the Central Livestock Market," The Journal of Business of the University of Chicago, Vol. XI (July, 1938).

Ralph A. Clemen, The American Livestock and Meat Industry (New York: The Ronald Press Company, 1923).

Williams and Stout, op.cit., Chapters 1 and 7-17.

emerging at Albany, Buffalo, Pittsburg, Detroit, Cleveland, and Cincinnati. This was to remain the dominant means of assembly for the beef animal until well after 1900.

Terminal markets provided a necessary connective link between production and consumption. Located at the major rail centers, a means was provided for shipping the live cattle in and out. Physical facilities were provided for the holding of the cattle prior to and during the exchange process. Meat packer representatives patronized the terminal in quest of livestock. The commission firm emerged as a representative for the producer in negotiating sale of the livestock with packer representatives.

The coordinative role of the terminal markets was bolstered by technological developments which decreased the importance of the time, spatial, and product-form separations between the producer and the consumer. Advances in transportation during the decade of the 1860's and thereafter constituted an important contribution. The extent of rail facilities began to expand. The pressing need for better coordination of rail activity led to the establishment of such cooperative efforts as the Union Stock Yards and Transit Company in Chicago in 1865. Duplication of effort was decreased, time and congestion problems at least partially solved, and the Chicago market blossomed into the dominant market in the terminal system. Railroads became more effective transporters and the railway system expanded into the West and Southwest.

Another pressing need was a means of processing meat for shipment in a manner to make it more palatable than the typical dry-salted,

pickled, or smoked product. Summer packing, theretofore impossible, began in 1857 in Chicago with the aid of dry ice, but it was not until the building of cold storage houses after 1865 that meat packing became an all-season industry. Shipments by refrigerated rail car began in 1869, and mechanical refrigeration permitted warehouse space during the 1878-89 period.

The livestock industry, particularly the meat packing segment, flourished as a result of the impetus generated by developments in transportation and processing. Packing plants developed in and around the major terminal markets, taking advantage of the importance of the markets as points of assembly. Demand increased as the fresh, refrigerated products were made available to the major consuming areas, especially in the East.

The centralized manner in which the packing industry developed required an extensive distribution system. Developments in transportation and refrigeration stimulated a move of the packing industry out of the Northeast and into the North Central region. With the appearance of the East as a deficit area and with increasing shipments from the Corn Belt to fill those deficits, a need arose in the deficit areas for wholesaling services. Meat packers in the surplus areas had begun to give more of their attention to procurement of livestock and to the slaughtering function. The packer branch house emerged in response to the need for a means of distribution.

The first branch house was established in Albany in 1885. By 1916 more than 1,300 branch houses were being operated by interstate packers.[1] Basically, the branch house was a geographical extension of

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[1] Clemen, op.cit., pp. 385-92.

packer activities, permitting product distribution in areas distant to the slaughtering and packing functions. Rail car routes, involving refrigerated shipments from the branch house to route customers, served to complete the distributive link. Expansion into areas other than the East was bolstered. The rail car routes reached more than 16,000 towns in Oklahoma, Kansas, Missouri, Kentucky and Iowa in 1916.[1]

As the meat packers grew, they increasingly integrated into the processing of meat. Local butcher shops made a transition from processing to provision of retailing services. The butcher shops became primarily retail meat stores buying from packers, wholesalers, and packer branch houses, and early efforts in meat retailing were largely confined to them.[2]

Concurrent with overall industry development, consumption of meat increased rapidly. The average per capita consumption of beef for the period 1900-04 was up to 68.1 pounds.[3]

Most of the early developments which set the stage for a complex beef marketing industry grew out of need. When the need is urgent the more subtle attributes of the operation are likely to be overlooked. Grading and market news are examples. During the early period of development, they would have been more nearly refinements than necessities. Too, information needs were slight in this period of simplified procedure. Consequently, developments in these two areas were slower in coming.

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[1] Ibid., pp. 400-02.

[2] Anthony and Motes, op.cit., p. 270.

[3] Williams and Stout, op.cit., p. 90, Table 4-2. As will be noted later, it was not until the mid-1950's that any substantial increase over this figure was realized.

Grading might be defined as a method of classifying or grouping units of a commodity such that the variation or range in quality is smaller within the groups than over the whole range of the commodity. More elaborate discussions of the objectives of grading are readily available, but it should suffice here to suggest that the basic function of grading is to provide a means by which the commodity under consideration might be more fully and accurately defined and/or specified.[1] Market news, on the other hand, refers to those activities designed to inform participants about the workings of the marketing system and its outputs in terms of price, quantities, and other important indicators such as pace of trading activity. Since product identification is essential to such efforts to inform, the relation between market news and grading is close. The two were indeed related in origination and development.

Early developments in grading emerged from demands for more complete[2] market reports concerning terminal market activity. By 1867, such terms as choice, prime, fair, medium, and common were being used to describe steers. All other cattle were lumped into one category. The relative weakness of the system was indicated by the widespread use of "place of origin" as an indicator of quality.

The first major attempt at the formulation of standard classes and grades of livestock that might be used for trading on all market

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[1]More discussion of the concept of grading, objectives, etc. will prove necessary later. Williams and Stout, op.cit., Chapters 19-21 discuss in depth the economics of grading, standards for grading, and grading as it relates to consumer preferences.

[2]"Complete" reports meant, among other things, a better description of the livestock which were being sold.

centers was by the Illinois Agricultural Experiment Station from 1901 to about 1909. This work did much to reveal the nature of the problem. Typical difficulties encountered included (1) the variable nature of the different classes and grades due to variations in quality, condition, visible supply of cattle and the activity of the dressed meat trade, (2) the difficulty of accurately describing animals typical of the various grades, and (3) a lack of uniformity in the classification of the various market grades of cattle and in the use of terms by those entrusted with selling, buying, and reporting the cattle market.[1]

Viewing these problems, Mumford was led to the following conclusion:[2]

> The existence of these facts (the difficulties encountered) leads to the conclusion that it is wise not to attempt to interpret existing market quotations, but to arrange a classification which will meet the requirements of the present cattle trade, and explain fully the same so that all can understand even if somewhat unfamiliar with market conditions and requirements.

A tentative set of standards was developed. This beginning, combined with mounting public pressure for improved reporting, set the stage for the entry of the U.S. Department of Agriculture after 1915.

Developments in the market news area largely paralleled those in grading. Prior to 1900, market news reports were the output of

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[1]Herbert W. Mumford, Market Classes and Grades of Cattle, with Suggestions for Interpreting Marketing Quotations, Illinois Agricultural Experiment Station Bulletin 78 (Urbana, Illinois: Illinois Agricultural Experiment Station, 1902), p. 371.

[2]Ibid., p. 374.

private concerns and typically oriented to one of the large terminal markets. City newspapers were among the first to become active in the reporting of market news.[1] On the terminals, commission agencies were active in disseminating available reports to producers. Progress was made, but by the turn of the century, the absence of an operational set of grades was placing constraining influences on development and use of market reports. Pressure was exerted for public assistance. In 1915, H. C. Wallace suggested the following in an editorial comment in Wallaces Farmer:[2]

> The (U.S.) Department of Agriculture should, at the earliest practicable date, inaugerate a system of weekly reports on (1) the number of cattle, hogs and sheep marketed; (2) the disposal of such cattle, hogs, and sheep; (3) the prices at which livestock was bought; (4) the wholesale prices of such products at representative points; (5) the retail prices of such products at representative points . . .

Wallace went on to suggest information be supplied on imports, exports, freight charges, commission charges, prices of feed, etc. Various producer associations adopted his ideas and the USDA began planning the development of a public market news service.

An overview of this early period of development suggests the interrelationships which were to prevail grew largely from necessity. The system was born during this period, and no single facet could make rapid strides of development without concurrent or previous development in related parts of the system. Shifts in population from

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[1] For more details on the development of market news reports during this early period, see Dowell and Bjorka, op.cit., Chapter 15.

[2] H. C. Wallace, "Investigation Should Follow Conference," Editorial, Wallaces Farmer, December 3, 1915, p. 1582.

the East and increasing urbanization of the Eastern population was perhaps an initiating factor. The location and pattern of production changed, separating production and consumption. Some means of connecting the two areas of activity was needed, and the terminal market system emerged. Commission agencies arose to represent producers in negotiating transactions with packer representatives. Meat packers clustered around the terminal market areas, seeking proximity to a concentration of livestock. Packer distribution procedures, with the branch house as focal point, were given a boost by technological developments in transportation and refrigeration. The consumer was reached and as consumption climbed, meat packers integrated into processing, often employing former butcher shops as retail outlets for prepared and processed meats.

By 1900, the situation was changing. More attention was paid the activities which bridged production and consumption, especially activities involving pricing, product description, and transportation. There was increased recognition that efficiency in preparing the product for consumption was important as well as efficiency in production. Pressures evolved for a standardized set of grades with which livestock might be more rigidly described and which would permit more meaningful intermarket comparisons. This was prompted and accompanied by demands for improved and more extensive reporting of price and other important market indicators. The change in perspective was noted, the pressures felt. The Office of Markets was established by Congress in 1913, paving the way for efforts by USDA agencies in grading and in reporting of market news.

More Recent Developments

More recent developments, essentially those since 1920, are of greater importance in developing understanding of the current beef marketing system as a system of action.

Production

Among the significant developments relating to production were those of changes in demand, productive responses to the changes in demand, and regional shifts in production.

The more important demand shifters were increases in population and changes in population patterns and national income. With increasing population levels came a relative increase in the population of the Western areas of the nation and the farm to city migration. These changes contributed to increased demand for beef in the aggregate.[1] The increase in population, taken in conjunction with rising incomes, was the more important factor. Breimyer estimated that between 1921 and 1958, a change of .97 percent in the retail value of beef has accompanied each one percent change in deflated disposable income.[2]

Production and total consumption increased together during the period, with no steady upward trend in per capita consumption of beef.

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[1] The Western part of the nation, particularly the Pacific Coast, ranks high in beef consumption per capita relative to other regions. See Williams and Stout, op.cit., p. 94. Urban households tend to consume more beef than farm households, especially before refrigerators and home freezers became widespread on farms. See DeGraff, op.cit., pp. 127-28.

[2] Harold F. Breimyer, Demand and Prices for Meat, Technical Bulletin No. 1253, U.S. Department of Agriculture (Washington: U.S. Government Printing Office, December, 1961), p. 51.

Total meat production increased at an average rate of slightly over one-half percent per year between the decades of 1901-09 and 1930-39. From 1930-39 to 1950-59, the average annual rate was up to two percent.[1] The pattern for beef was similar. During the 1920's and 1930's, production failed to keep pace with population increases and per capita consumption declined. The only marked change in per capita consumption of beef since the turn of the century began in the mid-1950's. From the 63 pounds consumed in 1950, per capita consumption of beef increased 58 percent to a high of 100 pounds in 1964. In 1965, per capita consumption declined slightly to 99 pounds.

Meat consumption is an accurate indicator of livestock production. In most years, only a negligible portion of the total supply is imported.[2] Given an increasing population and the marked increases in per capita consumption, production of beef has increased at a tremendous rate in the past decade.

A number of developments contributed to the increases in production. Among these was the increase in the number of cattle and calves on farms for purposes other than the production of milk. In 1920, 30.2 million cattle and calves were kept for milk. The "other" category, those not kept for milk, numbered 40.1 million head. In 1965, the two figures stood at 26.8 and 80.3 million head respectively.[3]

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[1] Ibid., p. 30.

[2] In 1965, the percentage of total supply imported was 4.9 percent. Anthony and Motes, op.cit., p. 281, Table 6.

[3] Livestock and Meat Statistics 1957, Statistical Bulletin No. 230, U.S. Department of Agriculture (Washington: U.S. Government Printing Office, July, 1958) and Livestock and Meat Statistics, Supplement for 1964 to Statistical Bulletin No. 333, U.S. Department of Agriculture (Washington: U.S. Government Printing Office, September, 1965).

Also important in facilitating increased production was the rise in relative importance of fed beef, meaning beef animals fed a high concentrate ration as opposed to grass or range fattened animals. Breimyer estimated that between 1922 and the mid 1940's, fed beef as a percentage of all beef produced was less than 30 percent. The percentage stood at 38.7 in 1945 and trended upward to 57.0 percent in 1960.[1] The increase was due primarily to turnover of inventories within the year, and is not revealed by comparing January 1 fed to nonfed inventory ratios. The ratio of "number of fed cattle marketed during the year" to "number of cattle on feed January 1" was 1.18 in 1930, 1.52 in 1944, and 1.84 in 1960.[2]

A closely related development was that of technological advance in production. Table II-1 is indicative of the change in productivity per man-hour expended. The advances appear modest, reflecting the effect of intensively fed dairy cattle, a large number of hours in dairying, and a shift during the period to feedlot feeding of beef cattle which requires relatively more man-hours than range or grass feeding.

Over the same period, productivity gains in meat animals relative to capital investment has been more pronounced. In terms of liveweight production of cattle and calves per cow on farms on January 1 (beef and dairy combined), the average for the 1925-29 period was 390.2 pounds. A steady upward trend led to an average of 584.6 pounds in the 1955-59 period.[3]

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[1] Breimyer, op.cit. See Table 28, page 106 and page 37.

[2] The ratios are based on calculations from data in Ibid., p. 37, Table 10.

[3] Ibid., p. 34, Table 9.

TABLE II-1.--Index numbers of meat animal production per man-hour and production per unit of feed fed, five-year averages, 1920-59

Year	Meat animal production per man-hour	Production per 1,000 feed units fed, cattle and calves
	(1947-49=100)	(Pounds)
1920-24	87	91
1925-29	90	93
1930-34	90	109
1935-39	89	109
1940-44	98	100
1945-49	99	102
1950-54	105	107
1955-59	111	106

Source: Harold F. Breimyer, Demand and Prices for Meat, Technical Bulletin No. 1253, U.S. Department of Agriculture (Washington: U.S. Government Printing Office, December, 1961), p. 33, Table 8.

Regional shifts in production have paralleled other developments. The period since 1920 has witnessed the trend away from range and marginal land production of cattle. The West North Central States produced nearly 40 percent of the slaughter cattle in 1930. During the 1940-64 period, this fell to 38 percent as total production more than doubled. More recently, the Western states, especially California and Arizona, have advanced in production even though they are grain deficit areas. Apparently sufficient economies are realized in handling, procurement, financing, selling, etc. to offset the higher cost of grain. Proximity to the population centers in California is also a permissive factor. More generally, Table II-2 indicates regional changes between 1949 and 1965. Comparison of January 1 inventories does not incorporate the all-important factor of inventory turnover

within the year. Climatic conditions in the West, Southwest, and South Central areas permit year-round feeding. Marketings relative

TABLE II-2.--Beef cattle and calves on farms, January 1

Region	1949 (1,000 head)	1965 (1,000 head)	Percentage change 1949-65
North Atlantic	439	714	62.6
East North Central	3,286	7,223	119.8
West North Central	14,125	28,018	98.4
South Atlantic	2,341	5,159	120.4
South Central	11,286	22,495	99.3
West	10,083	16,491	63.6
TOTAL	41,560	80,100	92.7

Source: The Livestock and Meat Situation, U.S. Department of Agriculture (Washington: U.S. Government Printing Office, May, 1955), p. 21; Livestock and Meat Statistics, Supplement for 1964 to Statistical Bulletin No. 333, U.S. Department of Agriculture (Washington: U.S. Government Printing Office, September, 1965), p. 8.

to January 1 inventory was 2.64, 2.70, and 3.41 in California for the years 1956, 1957, and 1958 respectively.[1,2] Other Western and Southwestern states have fewer turnovers, but still market more than January 1 inventories would indicate. Table II-3 helps to complete the picture of regional changes by ranking marketings by states. The corn belt states of Iowa and Nebraska lead but examining marketings instead of inventories suggests the West and Southwest are important and are becoming more so.

[1] Herrell DeGraff, Beef Production and Distribution (Norman: University of Oklahoma Press, 1960), p. 73.

[2] According to Hopkin and Kramer, the average turnover ratio, on basis of feedlot capacities, was 1.59 in California in 1963. They cite (1) longer feeding to finish cattle to a quality comparable to USDA Choice, and (2) increased feeding of calves and light yearlings as reasons for an apparent decrease in turnover between 1956 and 1963. See John A. Hopkin and Robert C. Kramer, Cattle Feeding in California (Bank of America N.T. and S.A., January, 1965), p. 34.

TABLE II-3.--Marketings out of feedlots, selected states, 1963

States (in descending order by volume)	1,000 head	Average annual rates of increase of cattle on feed January 1, 1954-64
Iowa	2,862	1.4
Nebraska	2,012	1.8
California	1.899	4.2
Illinois	1,245	1.4
Colorado	900	3.6
Texas	896	6.1
Minnesota	626	1.4
Kansas	617	3.6
Arizona	608	4.4
Indiana	315	1.4

Source: John A. Hopkin and Robert C. Kramer, Cattle Feeding in California (Bank of America N.T. and S.A., January, 1965), pp.36-37.

Typical feedlot sizes are on the increase. Hopkin and Kramer report an average feed-lot capacity of 10,413 in California in 1963.[1] The authors suggest a decline in average nonfeed costs (salaries and wages, taxes, interest, insurance, depreciation, etc.) per head up to about 26,000 head per year. Daily nonfeed costs in cents per head declined from 12.7 cents for about 3,000 head to 8.7 cents for about 7,000 head. Less marked decreases up to 26,000 head prevailed where a low of 7.0 cents was reached. There is some indication that the costs then rise slightly.[2] Hunter and Madden found that the average feeding cost per head declined substantially up to a capacity of 1,500 head.[3]

[1] Ibid., p. 7. This is a weighted average, giving consideration to the proportion of total capacity in the various size groups.

[2] Ibid., pp. 32-33.

[3] Elmer C. Hunter and J. Patrick Madden, Economies of Size for Specialized Beef Feedlots in Colorado, Agricultural Economic Report No. 91, U.S. Department of Agriculture and Colorado Agricultural Experiment Station (Washington: U.S. Government Printing Office, 1966).

Assembly

The most striking change in methods of assembly has been the relative decline in importance of the terminal market.[1] The proportion of fed beef sold through the terminal markets has declined, especially in the past two decades. Various types of nonterminal means of selling have become important. Auction markets expanded at a phenomenal pace during the 1930's, from 200 in 1930 to 2,000 in 1940. The number reached 2,500 in 1952 and has declined slightly since. Another development which has contributed to the decline in relative importance of the terminal is the increase in country selling.[2] Such "direct" marketing of cattle is not new, accounting for about 25 percent of marketings in 1938.[3]

Table II-4 indicates the relative importance of the various means of assembly by regions, in 1955. Williams and Stout report a similar regional assembly pattern for 1961, though at typically lower percentage levels for nonterminal marketings.[4] By 1962, Williams and Stout's estimates of nonterminal marketings for slaughter cattle (those for commercial slaughter) stood at 65.1 percent. Anthony and Motes report that in 1964 packers purchased 37 percent of their cattle

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[1] For more detail on these developments, see Williams and Stout, op.cit., Chapters 7-11.

[2] Country selling is a generic term, here used as indicative of direct purchases by packers, movement to packers through country dealers, etc.

[3] Dowell and Bjorka, op.cit., p. 128.

[4] Williams and Stout, op.cit., p. 195. Comparison of total nonterminal marketings for 1955 suggests a different base was used in calculating relative to the Phillips-Engelman report.

through terminals, 19 percent through auctions, and 45 percent direct.[1]

TABLE II-4.-- Percentage of cattle sold through different market outlets, by geographical region, 1955

Region	Marketed (1,000 head)	Terminals	Auctions	Country sales	Total nonterminal
Northeast	1,302	21	36	40	76
East North Central	5,478	49	20	29	49
West North Central	12,952	56	23	20	43
South Atlantic	2,576	4	68	27	95
East South Central	1,916	22	45	32	77
West South Central	3,109	13	46	38	84
Mountain	3,402	39	22	31	53
Pacific	2,807	17	8	72	80
United States	33,542	38	29	31	60

Source: Victor B. Phillips and Gerald Engelman, Market Outlets for Livestock Producers, Marketing Research Report No. 216, U.S. Department of Agriculture (Washington: U.S. Government Printing Office, 1958).

Nonterminal marketings thus remained relatively high, with direct or country sales beginning to account for a larger portion of total nonterminal marketings.

As means of assembly have changed, so too have the bases for pricing of livestock. For fed beef, the liveweight and grade method of selling is by far the most important. Price is negotiated for the live animal with grade, as indicator of live animal quality, playing an important role in the negotiation processes. The grade of the animal or lot of animals may never be mentioned explicitly, but each party to the process will have estimated the grade and will bargain accordingly. Price is on the basis of dollars per hundredweight for the live animal.

[1] Anthony and Motes, op.cit., pp. 261-63.

The carcass grade and weight method of selling differs primarily in that the value of the animal is not determined in live form. Typically, price negotiations are conducted prior to slaughter and a schedule of prices by carcass weight and grade classes is established. The particular price paid for the animal is then determined on the basis of the weight and grade of the dressed carcass. This is an increasing method of selling, becoming important in most regions and especially in the West and Southwest.

Other forms of selling in carcass form are receiving scattered support. Custom packing and consignment selling are two techniques by which animal value is determined after slaughter. Unlike carcass grade and weight selling, however, price is not negotiated before slaughter and wholesale carcass prices typically become the price which is used.

Meat Packing[1]

The most widely discussed and the most important changes in meat packing have been the continued decentralization of the industry and concurrently, decreased concentration of the industry. Within this environment of change, increased specialization by function has developed.

Decentralization of the meat packing industry was prompted in part by basic economic dictates concerning transportation. With a

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[1]For more detail on developments in the meat packing industry, see Williams and Stout, op.cit., Chapters 1 and 14; Willis E. Anthony, Structural Changes in the Federally Inspected Livestock Slaughter Industry, 1950-62, Agricultural Economic Report No. 83, U.S. Department of Agriculture (Washington: U.S. Government Printing Office, 1966).

decreasing percentage of 50-65 percent, the advantages of shipping the finished carcass versus the live animal are obvious, other things equal. Stabilization of the livestock-dressed meat freight differentials led to a rough locational equilibrium between 1907 and 1920. This equilibrium was upset by World War I which concentrated slaughter in the Eastern Corn Belt and after 1920 by increased corn production in the Northwest Corn Belt. The larger packers, located near the terminals, sought to restore the equilibrium by extending their operations into the Corn Belt areas.

Concurrently, smaller independent packers began to grow in number and importance. Their cause was bolstered by the Consent Decree of 1920 and a general increase in freight rates of 35 to 40 percent by the Interstate Commerce Commission in August of 1920. Producers began to look for markets nearer home and interior (non-national) packers were willing to provide those markets. Improved roads and increased use of the motor truck gave producers the option of marketing near home instead of shipping often long distances to the terminals.

The rate of decentralization was likely conditioned by the degree of concentration in the meat packing industry. Nicholls suggests that between 1916 and 1930 the five dominant firms prevented smaller firms from taking over a larger percent of the industry by purchasing some of the smaller firms, closing down the acquired plants, and redistributing the additional volume through their own underutilized plants.[1] The large packers also established buying stations and concentration points in the production areas rather than build plants

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[1]William H. Nicholls, "Market Sharing in the Meat Packing Industry," Journal of Farm Economics, Vol. XXII (February, 1940).

there or operate purchased ones. Table II-5 is indicative of the degree of concentration which prevailed during this period.

TABLE II-5.--Percentage of interstate slaughter controlled by the "Big Five"[a] packers, selected years, 1920-37

Year	Percent of interstate slaughter			
	Hogs	Cattle	Calves	Sheep and lambs
1920	51	71	67	78
1925	48	73	68	80
1930	45	68	69	83
1935	51	66	70	80
1937	51	63	70	79

[a]The number was reduced to four by a 1923 merger.

Source: William H. Nicholls, "Market Sharing in the Meat Packing Industry," Journal of Farm Economics, Vol. XXII (February, 1940), p. 232.

The degree of concentration has changed considerably since 1937. Federal grading of beef was made mandatory during World War II and the Korean conflict. The result was an increase in the percentage of beef federally graded from about 10 percent in 1940 to approximately 50 percent in 1955. Federal grades have been attributed with a major role in the decentralization of the industry. Independent meat packers and wholesalers have found federal grades to be effective merchandising tools and have been able to combat the effectiveness of the national packers' established brand names.[1]

[1]Willard F. Williams, Earl K. Bowen, and Frank C. Genovese, Economic Effects of U.S. Grades for Beef, Marketing Research Report No. 298, U.S. Department of Agriculture (Washington: U.S. Government Printing Office, January, 1959). This reference deals in detail with the impact of federal grading on the economic and competitive status of the livestock industry.

Independent packers have taken advantage of such opportunities. Locating with the changing geographical areas of production, and bolstered by increases in production, a flourishing demand for beef, larger and more efficient production units, and the opportunity to buy away from the terminal markets, the independent packers have increased in relative importance. Anthony reports that in 1950 the four largest slaughter firms accounted for 51.5 percent of national federally inspected slaughter and 38 percent of total commercial slaughter. By 1962, their share had declined to 29.5 percent of federally inspected slaughter and 23 percent of total commercial slaughter.[1]

Plant locations reflect much of the noted change. The East North Central area remains the important seat of packing activities, accounting for nearly one-fourth of the plants in 1958. However, important increases have been noted in the South, including the South Atlantic and both the East and West South Central areas. These areas tend to exhibit plants with smaller capacity and have relatively fewer federally inspected facilities. However, the number of federally inspected plants has increased in the Northwest North Central Area, the Southern Plains (principally Texas) and to an extent, in the Southeast.[2]

Paralleling other developments has been increased packer specialization. This specialization has occurred by animal species, and perhaps more important, by function. Independent packers have specialized in slaughter and left production of sausage and variety

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[1]Anthony, op.cit., p. 7.

[2]Williams and Stout, op.cit., p. 348.

meats to national packers and the processing specialists. An increasingly common type of specialization by function is that of the "shipper-type" packer. Typically an independent packer, this type of packer slaughters a particular grade or class of one species in volume, is usually located in a supply area, and ships to large-volume intermediate handlers or large retail accounts wherever they may be located. Shipments are usually in carcass form with little or no processing.

Distribution--Wholesaling and Retailing

Developments in wholesaling and retailing of meat have not been unrelated. The situation which prevails in one sector affects needs and the type of operation which will be economically viable in the other sector.

The most pronounced development in wholesaling has been the increased importance of independent meat wholesalers and merchandising agents (meat brokers) relative to the packer branch houses. The data in Table II-6 are indicative of the change which has occurred.

TABLE II-6.--Meat wholesalers and distributors: Total sales and sales per plant in 1958 dollars, selected years

	Total sales ($1,000,000)			Sales per plant ($1,000)		
Year	Wholesalers	Branch houses	Brokers	Wholesalers	Branch houses	Brokers
1929	1,576	4,392	228	708	3,796	1,757
1939	7,633	3,408	361	636	3,626	4,301
1948	1,932	2,746	558	604	3,632	9,628
1954	3,377	3,178	613	775	4,786	6,323
1958	3,879	2,303	606	870	4,429	3,960

Source: Williams and Stout, op.cit., p. 379, Table 15-2. The authors deflated original census data by an unpublished USDA Index of Wholesale Red Meat Prices.

Even more drastic changes have occurred in the retail sector. Prior to 1930, the retail food industry was characterized by a large number of small stores, nearly two-thirds of which did not carry fresh meat in 1929. Between 1930 and 1948, the retail chain move began to develop. Advantages accrued from standardization of procedure, centralized purchasing, low-cost selling methods, etc. The number of stores without fresh meat dropped substantially by 1948. Typically, the meat department of the store was leased to an independent operator. After World War II, the chains began to operate their own meat departments, seeking lower cost operations and control over procurement activities, quality, merchandising policies, and prices. More competitive and aggressive meat merchandising was introduced.

As the retail chains became more dominant, the number of retail stores decreased and the average volume by stores increased. Independent (non-chain) retailers joined into affiliated groups, seeking the advantages in procurement and distribution which have accrued to the large chains.

The impact of such developments on distribution from the meat packing segment is clear upon examination of recent distribution channels for red meat. In 1963, for the United States as a whole, retail stores handled 72 percent of packers' output. Thirty-five percent went to hotels, institutions, government, etc. About one-half (49 percent) of packers' output went directly to retailers. Of the remainder, 34 percent moved through wholesalers and brokers and 14

percent through branch houses.[1] Thus, the direct movement from packer to retailer has supplanted much of the volume the wholesaler, broker, and packer branch house would otherwise handle.

Consumption

The more important developments in consumption of beef have been the rise in per capita consumption, increasing beef consumption relative to pork, and an apparent change in consumer preferences.

As noted previously, per capita consumption of beef was largely stable around 68 pounds from the 1900-04 period to 1950-54. Since the mid-1950's, per capita consumption has increased rapidly to about 100 pounds in 1965.

The increased consumption has arisen largely from advances in income and changing work and living habits by the American people. In 1964 dollars, per capita disposable income was $1,628 in 1950, $2,099 in 1964. Breimyer found a relatively high and positive relationship between changes in disposable income and changes in retail value of beef (an approximation to expenditures). An increasingly calorie-conscious consuming population has adopted beef as a diet basic, and shifted from pork consumption. The image of pork as a high-calorie meat and a less favorable relationship between expenditures on pork and advances in disposable income have helped bolster increases in beef consumption.[2]

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[1] Organization and Competition in the Livestock and Meat Industry, Technical Study No. 1, National Commission on Food Marketing (Washington: U.S. Government Printing Office, June, 1966), p. 43.

[2] Between 1921 and 1958, a change of only .18 percent in the retail value of pork accompanied each 1 percent increase in deflated disposable income (as compared to .97 percent in the retail value of beef). Breimyer, op.cit., p. 51.

In 1964, 57 percent of the beef sold was federally graded. Of the amount graded, 77 percent was Choice. Since relatively less Choice beef is sold ungraded, the proportion of Choice grade beef to all beef marketed is believed to be less than the 77 percent.[1] Even so, the figures indicate the importance of this particular classification of beef in consumption. Within the Choice grade, as within the other grades, consumers are indicating preferences for the leaner cuts of meat, cuts characterized by little waste and low fat.

Given the positive relation between expenditures on beef and rising incomes, the current preference for beef versus pork, and an ability of the industry to supply the type of beef being demanded by consumers, consumption of beef is almost sure to remain high.

Grading and Market News

Federal grading of beef, officially initiated in the 1920's, did not receive rapid or widespread acceptance.[2] The grading terminology and the objectives of grading were largely unknown. In 1928, the service was changed from a publicly supported to a self-supporting fee basis. The fees were nominal, but the total cost to the packer in the form of inconvenience and disruption of work was not. Perhaps more important as a restraining factor was a move by the national packers in the late 1920's to sell under their own brands. Prior to World War

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[1] Organization and Competition in the Livestock and Meat Industry, op.cit., p. 36.

[2] For more detail on the development of grading and the factors affecting acceptance, see Williams and Stout, op.cit., Chapter 20.

II, it seems probable that more beef was sold under packer brands than federal grade stamps. Still other hindrances arose from expressed inability of retailers to obtain a continuous supply of federally graded beef and from an overall lack of funds for expansion during the depression years.

By 1942, about 10 percent of the beef sold was federally graded and stamped. Grading was compulsory during World War II, but dropped to about 25 percent of beef sales during the late 1940's. Made compulsory again during the Korean conflict, the percentage of beef graded was around 50 percent during the 1955-60 period. In 1964, it was estimated that 57 percent of the beef sold was federally graded.

The official grade standards have been changed three times since 1928, the changes occurring in 1940, 1951, and 1956.[1] These changes were made in response to changing relative proportions of production by grades and with changes in consumer use and preferences in mind. Realignment of the grades supposedly facilitated the overall objective of categorizing the product into economically significant classes.

The basic provisions of grading have persisted. The grade of a beef carcass depends on quality and conformation. The "quality" aspect refers to marbling, texture and firmness of lean, and indications of maturity. "Conformation" refers to the build, shape, or proportion of the carcass or its various parts. Within certain limits, conformation and quality are permitted to compensate for one another at specified

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[1] See Williams and Stout, op.cit., p. 502, Table 20-2, and Official United States Standards for Grades of Carcass Beef, Service and Regulating Announcements A.M.S. 99, Agricultural Marketing Service, U.S. Department of Agriculture (Washington: U.S. Government Printing Office, 1956).

rates. Both factors are based on visual physical characteristics of the carcass. Standards have also been devised by which the live slaughter animal can be graded.[1] The relation between the live grade and the carcass grade is theoretically exact.

In 1962, a significant innovation in grading was attempted. The USDA offered on an optional basis a grading procedure by which the cutability (the yield of lean meat) of the beef carcass would be given more consideration. Known as the dual grading system for beef, the attempt was a modification of the system in use.

Under the new system, the quality characteristics of a carcass were determined as before, using the same criteria. However, conformation was not considered directly, but was incorporated into a cutability grade. The cutability grade ranged along a scale from 1 to 6, the digit "1" indicating the carcass with the highest cutability or highest proportion of lean cuts to total carcass weight. Thus, a carcass grading Choice in quality might then be graded a Choice-1, or Choice-2, etc.

Underlying the proposed change was the desire on the part of the USDA to eliminate the need for compensation between the quality and conformation factors. Prior to 1962, the permissible rates of compensation were such that a carcass grading Prime in quality might grade Prime, Choice, or Good overall due to the compensating effects of

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[1] Official United States Standards for Grades of Slaughter Cattle, Service and Regulatory Announcements No. A.M.S. 112, Agricultural Marketing Service, U.S. Department of Agriculture (Washington: U.S. Government Printing Office, 1956).

carcass conformation. Pierce commented that "our present system of grading (the system based on quality and conformation attributes) fails to give as realistic an appraisal of value differences in beef carcasses as is needed."[1] Pierce indicated that research findings revealed a difference of $20-$30 in the retail value of Choice carcasses was not at all uncommon. To offset this, the cutability criterion was offered. The cutability grade was determined on the basis of (1) thickness of fat over the rib eye, (2) the size of the rib eye, (3) the quantity of kidney and pelvic fat, and (4) the carcass weight.

The dual grading proposal gained little acceptance by the trade. In 1965, a modification of the system was offered on an optional basis. The modification entailed the offering of "yield grading." Yield alone was graded or yield was combined with the quality grades to approximate dual grading, the difference being that conformation was no longer incorporated into the yield (cutability) scale.

Developments in market news, until the last decade, were largely in the form of refinement and extension.[2] Market news, as the term is here employed, refers to recent information on market conditions including references to recent prices, market volumes, demand conditions, and short-term changes and trends in all of these.

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[1]Remarks by John C. Pierce, Deputy Director, Livestock Division, Agricultural Marketing Service, U.S. Department of Agriculture, before the Twelfth Annual Cattlemen's Conference, Raleigh, North Carolina, January 18, 1963.

[2]See Williams and Stout, op.cit., Chapter 18. Also, Roy Rockenback, "Market News for Livestock Marketings in the Southeast," Agricultural Marketing, February, 1960, p. 12, and George R. Grange, op.cit., pp. 19-21.

Both public and private efforts are involved in the collection and dissemination of market news. Public efforts are on a state, federal, and federal-state basis. Much of the effort is by the Federal-State Market News Service under the direction of the Livestock Division, Consumer and Marketing Service, USDA.

Federal activity in the reporting of market news was born around 1916 in response to public demand. Initially, the reports covered trade in meat, but the emphasis was quickly shifted to trade in live animals. The nucleus of the system developed within the terminal market system. Trained reporters were established at the important terminals so that direct observation of the trading activity was possible. A system of leased teletypewriter lines, currently in excess of 20,000 miles, has been employed to connect the offices around the country into a giant informational network. Pertinent data from any region are potentially available to other regions, many of the data considered important being transmitted regularly. As federal grading has come into widespread use, the reporter has been trained in grading, and grading terminology figures heavily in the construction of disseminated reports.

As other forms of marketing gained prominence, the heavy reliance on the terminal market for reporting purposes has been weakened. Auctions flourished during the 1930's and thereafter. In areas where auctions are the important means of assembly and exchange, such as the Southeast, reporting activities have been expanded to cover them. More recently, largely within the past five to six years, the reporting of direct sales has been given increased attention. This is in response to the tendency toward direct selling.

In recent years, the wholesale market for meat has come to be considered as an important seat of pricing and exchange activity, to an extent indicative of what the situation will be at other points of exchange. Apparently reflecting this perception, federal activity in the reporting of the wholesale meat trade has expanded. Reports are available for the major centers of trade across the nation in terms of carlot and less-than-carlot quantities.

The output from these public efforts is varied and immense in volume. Typically, daily reports--and reports of progress during the day's trading--are made available to the mass media. The reporter's conclusions are available to members of the trade who are interested on a personal contact basis and over the leased wire system to parties at other markets. Mailed reports on a weekly and sometimes semi-weekly basis go out from the important reporting stations to interested parties. Commission agencies are important users of the reporter's work in disseminating information to producers.

The more important private effort is the National Provisioner's "Daily Market and News Service," widely known throughout the trade as the "Yellow Sheet." Begun in 1923 by the National Provisioner, Inc., the "Yellow Sheet" is a daily reporting service on open market carlot trading of meats and packinghouse products. Emphasis is given the previous day's closing quotations in the report, made available to subscribing customers by first class and air mail, and by telegram (a midday and a closing wire are offered).

Results from the daily reports are published in summary fashion in The National Provisioner, a weekly trade magazine. Emphasis is on meat, as with the daily report, but both include information on livestock prices at important markets and The Provisioner typically includes an indication of federally inspected slaughter at major centers. The information on live cattle trade and federally inspected slaughter is taken from the USDA reports.

Other private sources include the Daily Drover's Journal published in Chicago. Within the past year, this publication has changed to a weekly. Where the publication once maintained reports on the major markets, this too has been deemphasized and reliance on USDA reporters for information made more complete.

A relatively new private report is the "Meat Products Clearing-House Service," published by Meat, a meat industry magazine. The service provides immediate ticker tape reports of meat prices and movements by source and destination. Most of the major packers have subscribed to this service.

Excluding the private efforts,the following is indicative of the types of market news concerning fed beef which are published by the USDA. A summary of these data is distributed weekly from Washington in Livestock Meat and Wool Market News:

1. Data on prices, price ranges, supply, demand and other market factors and influences. Information on "activity" or the relative pace at which sales are made, on "consist" or supply by class, grade, or weight, and on "clearance"

indicating how completely available supplies have been taken is also provided.

2. Information for 12 major livestock markets on number, total weight, total cost, and average cost of slaughter steers and heifers by grades.
3. Receipts and disposition of livestock from about 60 terminal markets are obtained monthly and released monthly and annually.
4. The Market News Service makes estimates of total weekly slaughter under federal inspection at major slaughtering centers for the preceding week. Estimates of average live and dressed weights are made for each species to obtain estimated weekly meat production under federal inspection.

The Present

The beef marketing industry is experiencing a period of transition and adjustment. As the industry changes, so too must the grading and market news services if they are to fulfill their prescribed roles as coordinating devices.

All industry activities are conducted within constraints imposed by consumption levels and trends. Beef consumption has increased markedly in the past decade. Increasing population levels, incomes, and a positive relationship between changes in income and consumption of beef has fostered the rising consumption levels. With the increases in consumption has come a change in preference patterns. The modern consumer is insisting on leaner, less wasty cuts of beef.

The changes in levels and patterns of consumption have placed pressure on an industry not known for its ability to adjust. That production has increased markedly is obvious since consumption is largely a mirror image of production. More cattle for beef purposes, increased output per unit of labor and capital input, and the trend toward production in the large, efficient commercial feedlot have permitted increased production. The number and size of feedlots continues to increase and are expanding into the West and Southwest. Capacity to produce is not likely to be strained, at least not in the volume sense.

Pressures are still being exerted for conformance with the change in consumer preferences. A number of developments have permitted these pressures to come to sharp focus.

Concentration at the retail level is increasing. Retail outlets are becoming fewer in number and larger. The retail chain has risen to a point of prominence and independent retailers are banding together in affiliated groups. With these developments have come changes in the means of distributing packers' output. In 1963, nearly three-fourths of the meat sold by packers was handled by retail stores. Half of packer output went directly to retailers. Independent wholesalers and brokers handled much of the remainder.

All these developments have bolstered the retailer's capacity to make demands on packers and receive compliance. An important demand has been increased specification of meat relative to that provided by federal grades. The inability or unwillingness of the industry to adjust to these demands was instrumental in precipitating the

the price break for live animals in 1963-64. A large supply of heavy, highly finished animals saturated the market during that period, and moved sluggishly through the system into consumption. Even though the retail segment apparently recognized the need for changed patterns of production, the remainder of the industry did not adjust. The system was apparently unable to discourage production of the type of product becoming less attractive to consumers. These same pressures continue to be exerted as further productive adjustment is needed.

Changes in the means of assembly and sale of live animals are occurring with the increases in production, consumption, and the emergence of the retail segment to a position of power. In 1950, packers bought three-fourths of their cattle on terminal markets; by 1964, only 36.5 percent. Direct movement from the feedlot to the packer is gaining popularity in the important production areas. In the West and Southwest production areas, most of the fed beef is moving direct. In the Midwest and North Central areas, both long seats of terminal activity, the trend is picking up momentum. Iowa producers who never before marketed cattle except through terminals are now, by their own admission, selling direct to packers.

As the channels of livestock movement change, so too do the means of selling. Liveweight and grade remains the dominant means of selling, but carcass grade and weight selling is becoming more prevalent. Anthony and Motes report that carcass grade and weight selling accounted for only 4.2 percent of cattle slaughter in 1961.[1] However, industry

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[1] Anthony and Motes, op.cit., p. 263.

personnel estimate that over 20 percent of the slaughter cattle now being sold in Iowa are sold via some form of the carcass grade and weight method; estimates are even higher in the West and Southwest.

Surrounded by an environment of change, the packing industry has made adjustments. Slaughter facilities are moving to the production centers. Plant sizes, on an average basis, are becoming larger but the variation in size is also increasing. Plants are being modernized and specialization by species and/or function becoming the order of the day. The total number of slaughtering firms has increased and the degree of concentration declined sharply.

The feeding of cattle by packers is increasing. In 1964, the cattle fed by the eight largest packers or fed for them on a custom basis amounted to 4 percent of the beef and veal produced by the packers. For 41 other packers responding to a survey, the number of all cattle owned 11 or more days in advance of slaughter accounted for 16 percent of their beef and veal production in 1964.[1] Packers rationalize such feeding activity as "inventory control." Producers tend to view the same activities as a means of controlling price.

Change breeds conflict. Change and coordination are, to an extent, mutually exclusive. Yet, change has been the byword of the beef marketing system, especially in the past 10-15 years. The role of any service of a coordinative nature is made both more important and more difficult by accelerated change and instability. Increased importance emerges from the opportunity which prevails. New organizational structures and procedures of operation are formed during periods

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[1] Organization and Competition in the Livestock and Meat Industry, op.cit., pp. 101-04.

of transition. The potential of direction is offered the coordinative services during such periods. Yet, the task of achieving coordinated effort is made more difficult by transition and change. Stability of relation gives birth to capacity for coordination as interrelationships are perceived and cultivated. Instability blocks that perception as the nature of the interrelationships change. The extent to which grading and market news are currently performing as coordinative devices is deserving of consideration.

Federal grades exert influence on system activities from the producer to the consumer.[1] The basic coordinative attribute of grading evolves from its provision of a standardized terminology. Producers examine available information on price and other important indicators for a market or across markets and/or methods of selling with some assurance that similarly described livestock will exhibit similar physical and economically important attributes. Grading, by decreasing uncertainty as to the characteristics of the product (the beef animal), opens the door for adjustments as to time of selling as well as where and how to sell. Price fluctuations are reduced by promoting a more orderly flow of livestock to the market place and spatial coordination is promoted by decreasing the likelihood of any one market receiving a disproportionately large or small supply of a particular type of cattle.

Grades function as guidelines to the packer in the buying of beef cattle. Increasingly, the packer is selling to retailers who require detailed specification of the dressed carcass. Terminology employed in

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[1] The purpose at present is to examine the role which grading plays in coordinating market activity. Evaluations of this service with regard to any shortcomings which might prevail will be considered in more detail in Chapters IV, V, and VI.

such specification varies, but often begins with federal grades as a point of departure. Packers then attempt to purchase the live animal with such requirements in mind. They too employ grades as a point of departure. Estimates of grade and the attributes of the animal within grade are required when buying on a liveweight basis. Less subjectivism, less estimation, is required when the packer buys via some form which employs the grade of the carcass itself. Coordination between retail requirements and production is promoted as the packer employs grades to identify, and stimulate production of (through price), the type of beef animal for which retailers exhibit the strongest demand.

Dual grading, introduced in 1962, has not been widely accepted. The proposal was and is basically an attempt to facilitate the coordinative role of grades. The cutability criterion is designed to more accurately specify the value of a beef carcass at retail--amounting to improved descriptive completeness. Current specifications employed by the retailer-wholesaler-packer complex lack the desirable trait of standardization. Dual grading would supply the needed element of standardization and if widely adopted, facilitate vertical and horizontal coordination within this complex of activity. Extended to the grading of live animals, the proposal would tend to bolster packers' ability to buy selectively. Appropriate patterns of production would be encouraged and coordination throughout the system facilitated.

Doubts concerning the practicability of dual grading has tended to block its acceptance. Packers are concerned about the extra cost of a more refined system of grading. Questions are raised as to whether an adequate level of accuracy could be attained.

Vested interests of industry participants have provided another source of opposition. National packers oppose all federal grading, considering it detrimental to their established brand names and overall competitive position. Too, the packers contend dual grading would not "fit" what they can do in the market, apparently meaning they do not care to disrupt relationships with customers which have been developed in terms of situation-oriented terminology.

Early experiences with dual grading brought opposition from other sources.[1] Much of the dual grading of the first year was in California and the Cincinnati, Ohio area. The "plain" cattle of the California area, typically crossbreeds, reached the Choice-2 grade even though they would have ranged from Standard to Good on the conformation scale. Retailers were skeptical of the value of these carcasses, and they were never effectively merchandised. A bad image for dual grading was the result, and from this experience, the "beef breed" producers of the Midwest often came out in opposition to the dual grading proposal.

The neutral position adopted by the retail segment was yet another factor. Apparently afraid their image would be damaged whichever stand they took, the retailers stayed "on the fence." Adoption by this influential segment might have made a difference.

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[1] This and the following point was developed during an interview with a member of the Livestock Division, Consumer and Marketing Service, U.S. Department of Agriculture.

Though dual grading has not been accepted, the proposal and subsequent discussion may have exerted a positive influence on the coordinative capacity of grading. Producers are speaking of the need to avoid production of the heavy and wasty animal. Government graders are "ribbing" all carcasses. Market news reporters are indicating those instances in which heavy animals are discounted and some are incorporating dual grading terminology into informal discussions with trade personnel. Packers discuss the requirements of retailers, often with reference to the dual grading criteria. Whether the pressures of price alone or price in conjunction with the attention the dual grading proposal received have fostered these developments is unknown. Emphasis on price as the relevant force can scarcely ignore the impact which the dual grading proposal may have had on pricing processes.

To a considerable extent, the coordinative capacity of market news is determined by the relative sufficiency of grades as characterizing values, as a descriptive terminology. The degree of complementarity between the two is pronounced. If procedure and expanse of market news reporting were held constant, improved grading in the coordinative sense would bring corollary improvement in market news.

The coordinative aspect of market news emerges from its role as source of information.[1] The producer looks to market news for information facilitating his decisions concerning when, where, and how to sell. Packers need information of similar nature concerning their

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[1] As with grading, the present purpose is one of establishing in cursory fashion the role which market news plays, not evaluation of that role.

buying processes. When both parties are informed, fewer short run fluctuations are experienced on any one market and the pattern of activity among markets takes on an air of order.

Coordination is increasingly needed along dimensions other than time. When one method of marketing dominates, the basic decision is deciding when to sell. Such was the case with terminal markets at one time. Needed were means by which the flow of livestock from producer to packer through the terminal market would, over time, be more orderly. By reporting relevant price and quantity data and evaluating the pace of trading activity, market news facilitates the attainment of such an orderly movement.

As other methods of marketing emerge, new dimensions and new needs arise. Some means of coordinating activity across markets and methods of selling are needed. The USDA's answer has been extension of reporting activities to cover the alternatives, theoretically providing the basis for overall coordination of sales activities.

Brief mention is in order of the problem which is accompanying such changes. Reporting the nonterminal transactions seems essential. Yet, the negotiation between producer and packer in direct movement, the nonterminal alternative which is increasing in importance, is often based upon terminal price quotations. The desirability of this type of coordination is questioned. As fewer cattle are sold through terminals, with the current reliance on terminal quotations, negotiations are being tied to a segment of total livestock sales which is of declining relative importance. This somewhat intriguing situation will receive more attention later.

In the wholesale meat market, the needs are somewhat similar and are being met by similar types of adjustments. Alternative routes of movement to the retail segment have emerged. Coordination across these alternatives as well as along the time dimension is needed. Price data are reported, enabling buyers and sellers to enter or leave the market--within operational limits--at opportune times. The product flow is thus made more orderly and less nearly characterized by price gyrations. Coordination across the alternative routes and markets is facilitated by providing price data by specified products. The "Yellow Sheet", the dominant reporting service at this level, has been joined by increased USDA activity. The latter is attempting to cover trading activity in all the important markets.

Formula pricing, based primarily on "Yellow Sheet" quotations, is increasingly adding a note of coordination to wholesale meat market activities. Not unlike the situation developing in the live cattle market, there is reason for concern over the desirability of this type of "coordination." As formula pricing increases, fewer transactions are made via negotiated settlement. Whether the "Yellow Sheet", or any other reporting mechanism, is then capable of reporting prices which characterize the underlying forces of supply and demand is open to question. Further consideration of this development will be required.

CHAPTER III

THE COMMUNICATION PROCESS

Introduction

Attention has been given the act of communication between individuals or groups for many years. Anthropologists have concerned themselves with how customs have been transferred from one generation to another. Economists have examined, often in theoretical and abstract fashion, personal interactions through consideration of trade or negotiation processes. Few of the disciplines which concern themselves with the behavior of people could deny their reliance upon the interactions between and among the persons with whom they are concerned. Yet, consideration of communication as a distinct area of activity is relatively new. Communication as a discipline is still in the embryo stage and has not as yet settled into the comforting and stable niche many other disciplines enjoy in the total span of disciplinary activity.

Given the current stage of development, consideration of the communication process and the use of its conceptual output require more thorough explanation than might be the case with more established areas of activity. The process itself and the basic conceptualizations which have been developed, and which appear relevant to this analysis, will be examined to facilitate the development of an appropriate communication model.

The Purpose of Communication

Aristotle defined the study of rhetoric (communication) as the search for "all the available means of persuasion."[1] This perception was extended in the late eighteenth century to a threefold division of the purposes of communication: to inform, to persuade, and to entertain. Some contemporary scholars criticize such a division, contending that (1) there is a persuasive dimension to all language, (2) the purposes are not exclusive, as the division tends to imply, (3) the division tends to foster the incorrect assumption that the "purposes" can be considered as independent, and (4) this approach to defining purpose is message-centered, not behavior-centered.[2] This latter point is important to the individual who seeks to examine the communicative intent and behavior of people in a social setting. In such a context, and taking a behaviorist's view, it would appear to be more useful to define purpose in terms of the goal of a sender or receiver of a message, rather than in terms of various properties of the message itself. Berlo follows this approach and suggests the purpose of communication is to influence, to affect with intent.

Colin Cherry adopts a similar perspective when he suggests that communication is essentially a social affair. He suggests that

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[1]W. Rhys Roberts, "Rhetorica," The Works of Aristotle, ed. W. D. Ross (Oxford: Oxford University Press, 1946), Vol. XI, p. 6.

[2]David K. Berlo, The Process of Communication, (New York: Holt, Rinehart and Winston, 1960), pp. 8-10.

communication renders social life practicable, since communication means organization. More specifically, Cherry adopts a definition of communication framed in terms of a discriminatory response by an organism to a stimulus.[1] He promotes a view of communication which focuses not upon the response itself, but upon the relationship set up by the transmission of stimuli and the evocation of responses. Behaviorists would applaud this view since the relationship to which Cherry refers can only be established in terms of the people involved. Cherry would apparently agree that the basic purpose of communication is to effect a response, especially when that response conditions, and is conditioned by, the social environment.

In some quarters, a division of the purposes of communication along the previously mentioned lines is being perpetuated. Hovland, Janis, and Kelley report on research into what they call "persuasive" communication.[2] Such an emphasis on one element of communication is not unproductive. It permits concentration of effort and perhaps more detailed insight concerning the "element" being investigated. The approach is replete with dangers, however. It overlooks the very real possibility that any division of purpose cannot result in exclusive and independent categorizations. Too, the concept of communication as a process is being denied since not only is the process being stopped, which is typically a necessary abstraction, but the "still" picture is being examined in part only.

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[1] Colin Cherry, On Human Communication, (The Technology Press of Massachusetts Institute of Technology, 1957), p. 6.

[2] Carl I. Hovland, Irving L. Janis, and Harold H. Kelley, Communication and Persuasion. (New Haven, Connecticut: Yale University Press, 1953).

For purposes of this analysis, the broadly conceived purpose of communication is the stimulation of a response via some transmitted cue in the form of a message. Such a broad conception is not very operative, lacking an adequate basis for developing understanding of the communication process. It establishes the correct orientation as to direction or emphasis, but not with regard to specificity. The purpose of communication acts demands more attention.

Dimensions of Purpose[1]

Given that the purpose of communication is to affect, questions remain as to whom will be affected and how they will be affected. This is the area Cherry was referring to when he spoke of a discriminatory response to a stimulus.

Berlo suggests that purpose and audience are inseparable. All communication behavior, upon examination, is seen to have as its basic purpose the attaining of a specific response from a specific audience. This bit of refinement becomes important in two ways: (1) the communicator may elicit unintended responses if his message is received by other than his intended audience, and (2) criticism of communication as failing to achieve its purpose, based on the critic's response, is unwarranted if the critic is not a member of the intended audience.[2]

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[1] The dimensions referred to are suggested by Berlo, op.cit., pp. 14-20.

[2] The individual can, however, observe the behavior of others for whom the message was intended and on this basis, evaluate the relative success of the communicator. His role as an observer should be made clear and an expedient approach is to adopt a meta-language for descriptive and evaluative purposes.

Thus, the communicator must have his intended audience clearly in mind and address his remarks to this subset, using any amendable and feasible safeguards to insure his message is not "received" by persons for whom it was not intended. Further, if the purpose of the communicator and the purpose of his audience--even his intended audience--are incompatible, communication will break down. The "who" of purpose becomes crucially important.

After an audience has been selectively chosen, the question remains as to how the source (or the receiver) intends to affect behavior--what kind of effect is desired?[1] Festinger refers to concummatory and instrumental purposes, the two being viewed as polar extremes on a continuum.[2] Position along the continuum is determined by the extent to which the purpose of a message is accomplished entirely at the moment of consumption or whether the consumption of the message is only instrumental in producing further behavior. Schramm views this distinction and speaks of "immediate" as opposed to "delayed" rewards.[3] A person may produce a message in a consumatory manner (as an artist painting a portrait) or in an instrumental manner (by placing the portrait on sale and waiting for a buyer).

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[1]For present purposes, "source" may be defined simply as the originator of a message (a stimulus, a cue) and "receiver" as the recipient of a message. Acting on the basis of the received message, the receiver may instigate an effect on himself or others. If the latter, he is then acting as a source in a "new" communication cycle.

[2]Leon Festinger, "Informal Social Communication," Psychological Review, Vol. LVII (September, 1950), pp. 271-92.

[3]Wilbur Schramm, "The Nature of News," Journalism Quarterly, Vol. XXVI (September, 1949), pp. 259-69.

The receiver may be the discriminating party to the process, and employ various messages differently. He may read and consume for purposes of relaxation or immediate enjoyment. On the other hand, he may read and build a store of knowledge for future purposes, perhaps as inputs to future decision processes.

Two basic dimensions of the purpose of communication acts have been suggested, involving the audience from which a response is desired and the nature of the intended effect. This simple refinement is important, and many of the potential blocks to effective communication will be seen to emerge when these two dimensions of purpose and the guidelines they offer are ignored.

Models of Communication

Communication models are basically attempts to typify the process of communication. They vary according to the disciplinary area in which they have birth and may appear different in form, but the intent is the same. Because they are models and as such, are restricted to a single point along the continuum of time, they are inherently deficient as typifications of the process of communication. The deficiencies arise in attempts to effectively handle the concept of process, a basic characterizing value of communication efforts.

The Concept of Process

The nature of a process is difficult to grasp. Much of the difficulty in understanding and evaluating the communicative act arises from the difficulty in even perceiving of that act as a process. Recall Cherry's emphasis on the relationship set up by the transmission of

stimuli and the evocation of responses rather than the response itself. That relationship is an intangible, accruing as a result of the reactions and interactions of the persons involved and is part of the nebulous process which permeates the entire realm of activity. In another vein, Cherry suggests that every communication changes a person's propensity and ability to produce and/or react; that the individual is continually becoming a different person, since his every experience is part of a continuing process.[1] Again, the concept of process is fundamental, but difficult to grasp.

Ball suggests that before the concept of process, men typically thought of the world as a place where things happen more or less independently of each other. With the concept of process, however, one is able to think about the implications of interrelated events. It is supposedly this concept of process that prevents the development of easy formulae for communication but at the same time, permits at least the promise of an approach that is realistic and based firmly on current knowledge in a range of scientific fields. Ball adds:

> Communication itself is a process, a complex of events operating in several dimensions of space and time, and always involving the attitudes, the knowledge, the communication skills of more than one person and the social and cultural context in which he is located.[2]

Berlo champions the view of communication as a process. He suggests that accepting the concept of process involves viewing the

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[1] Cherry, op.cit., p. 15.

[2] John Ball, "Process: The Conceptual Basis for Communication Study," Research, Principles, and Practices in Visual Communication, ed. John Ball and Francis C. Byrnes (East Lansing: Michigan State University, 1960), pp. 1-3.

events and relationships in the communication act as dynamic, on-going, ever-changing, continuous. Labeling something a process means that it does not have a beginning, an end, a fixed set of events. It is not static, at rest, but is moving. The components of the process of activity interact and each affects the others to varying degrees.

There are two problems, arising in the form of abstraction from reality, when one tries to speak or write about a process such as communication.[1] First, the dynamic aspect of the process must be arrested. Such a "still" look can be informative, but one must bear in mind that it is not a complete picture. The fluidity of motion and the dynamics are missing, as are any interrelationships which exhibit a time dimension. The comparative statics approach becomes relevant and is perhaps the best alternative. However, the breach in understanding of what happens between any two chosen time intervals is very real and not to be ignored.

The second problem arises from the need to use language in describing a process. Language itself is a process and changes over time; the stability which would be required to facilitate lasting descriptive relevance is largely missing. At the same time, one notes that writing, even spoken language over a short period of time, is relatively static. In using language to describe a process, certain words and structure must be chosen. The ability of the language to adequately portray the meaning of any non-static event is thus necessarily circumscribed.

Treating communication as a process does not provide an approach which is free of problems. Yet, if behavioral systems of action are

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[1] Berlo, op.cit., p. 25.

indeed the correct target of investigation, there seems to be no realistic alternative. To move in the other direction into the confines of stability and certainty leads to a static perception and approach and accordingly, largely out of the realm of activity which involves the variable of human behavior. Emphasis on the variable and adaptive communicative behavior of individuals and/or groups seems essential. Roy Murphy devotes an entire volume to an investigation of adaptive processes of individuals and social groups.[1] Adaptation means learning, and learning requires the ability and inclination to communicate. This would seem to be the crux of what "communication theory" is all about. The end result is a perception of communication as a flow of events interrelated to such an extent that one act in a series derives part of its significance from all other acts, and can be fully understood only in light of the total pattern, if at all.

The Shannon-Weaver Model

Among all efforts to formulate a model of the communication process, those of Warren Weaver and Claude Shannon have exercised perhaps the most pervasive influence.[2] Shannon and Weaver attempted to reduce the process to mathematical formulae and discussed the types of problems which could be handled with the developed model. Because the scope of their efforts was restricted largely to such a formulation and concurrent discussion, the model is deficient in many respects. However, unlike many of the subsequent efforts, the authors examined

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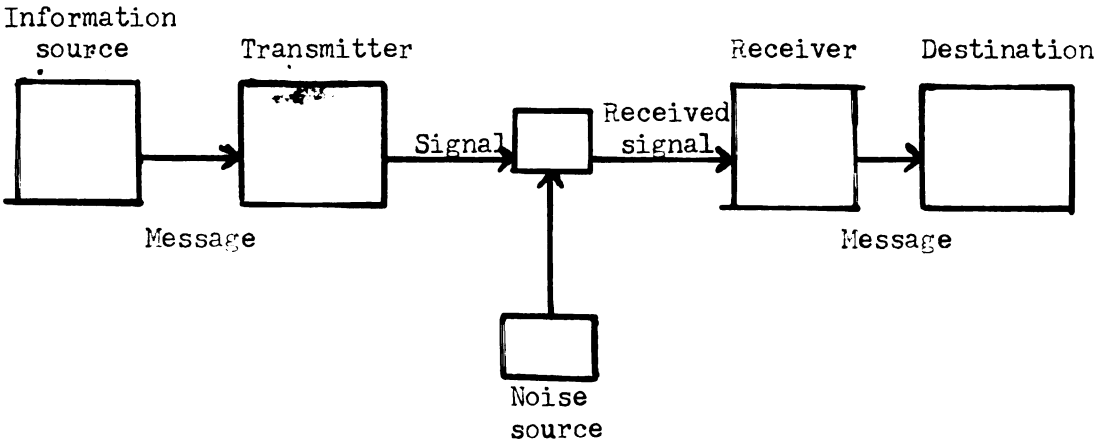
[1] Roy E. Murphy, Jr., Adaptive Processes in Economic Systems (New York: Academic Press, 1965).

[2] Claude E. Shannon and Warren Weaver, The Mathematical Theory of Communication (Urbana, Illinois: The University of Illinois Press, 1949).

the complete process. From this perspective has come a wealth of refinement and elaboration.

In shematic form, the Shannon-Weaver model is as shown in Figure III-1. The formulation is in terms of, or constructed for, mechanical

Figure III-1.--The Shannon-Weaver model



communication systems. However, the model was intended to apply to all types of communication and, with a slight modification of perception, this generality can be achieved. The modification needed will become apparent upon discussion of the various elements and their roles.

The <u>information source</u> produces a message or messages, from a set of possible messages, to be conveyed to the receiver. The <u>transmitter</u> operates on the message in such a way as to produce a signal which is suitable for transmission over the channel involved. This is the process often referred to as "coding." In human communication, especially the spoken word, the information source and the transmitter are one and the same. The <u>channel</u> is simply the medium used to transmit the signal to the receiver. It may be wires, radio frequencies, sound waves, etc. During the transmission process, the signal may be acted upon by a disturbing element or "noise" which converts it to the

received signal. The received signal may or may not be identical to the signal, depending upon the relative impact of the noise involved. The receiver, by performing the inverse function of that completed by the transmitter, reconstructs a message from the signal. The destination is the person or entity for whom the message is intended. Again, in human communication processes, the receiver and the destination often merge to a common entity.

Shannon's work was supposedly restricted to the technical problem of a communication system, dealing with the accuracy of transfer of the symbols involved.[1] Two basic aspects of the theory, which have attracted much attention, deal with the informational content of a message and the capacity of the channel involved.

Information, as the term is employed by Shannon, should not be confused with meaning. As used in the theory, information relates to what could be said, not what is said. It is, basically, a measure of the freedom of choice available to the source when selecting a message. As the symbols for a message are chosen, they are seen as being governed by probabilities which are the output of an ergodic Markoff process.[2] The measure is expressed in terms of logs to the base 2, incorporating the probabilities as characterizing values.

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[1] The theoretical formulation was primarily due to Shannon. Weaver's exposition, in the latter part of the book, entitled "Recent Contributions to the Mathematical Theory of Communication" was essentially a verbal explanation of Shannon's more mathematical formulations.

[2] The question of whether the English language (or any language) meets such requirements has led to differing opinions as to whether this measurement process can be legitimately applied to messages involving words. If and when the measure is used, this uncertainty should be kept in mind. Apparently, no conclusive position has been reached in the profession.

Weaver, and others, have suggested this measure is analogous to the entropy concept arising from thermodynamics. The entropy concept involves the notion that physical systems inherently tend to become less organized, to move toward a state of complete randomness. Relative entropy is seen as the ratio of $\frac{\text{actual entropy}}{\text{maximum possible entropy}}$. One minus the relative entropy is called redundancy, the proportion of the structure of the message which is determined by statistical rules governing the use of the symbols in question (instead of freedom of choice by the source).

Channel capacity was another important consideration to Shannon. He emphasized the importance of proper coding in relation to capacity, and formulated theorems for both noiseless and noisy channels. The crux of these theorems can be indicated by the following illustration:

Let: C = capacity of the channel in terms of units per period of time.

H = rate at which the channel accepts signals from the source (or source-transmitter) in units per period of time.

If $C \geq H$, there is at least one coding system, even for a noisy channel, such that $H - C = \delta$ where δ is an arbitrarily small number.

According to the theorem, the impact of noise (undesirable uncertainty) can be offset by more meticulous coding processes.

Weaver suggested there were two basic problems in communication in addition to the technical problem with which Shannon was primarily concerned. They are (1) a semantic problem, dealing with how precisely the transmitted symbols convey the desired meaning, and (2) an effectiveness problem, dealing with how effective the received meaning is in affecting the desired response. Weaver suggests, and rightfully so,

that solution of the technical problem is a necessary condition for solution of these other two problems. He goes on to suggest the following refinements which would equip the model to deal with the second and third problems:[1]

1. Place a "semantic receiver" between the receiver and the destination to match the statistical semantic characteristics of the message to the statistical semantic capacities of the totality of receivers.
2. Place a "semantic noise maker" between the information source and the receiver (and change the noise box to engineering noise), the root of the undesirable distortions not intended by the source but which affect the destination. The receiver would then be faced with a "semantic decoding" problem.
3. Consider the capacity of the destination (the audience) as well as the capacity of the channel. Overloading the destination may also cause distortion and misconception.

The Shannon-Weaver model is not highly adaptable to behavioral communication processes. The model is not concerned with psychological or social factors which might cause communication breakdown. Nevertheless, the formulation incited those working or interested in the area to delve into theretofore unexplored areas. The "entropy" measurement of informational content facilitated the development of information theory and the promise of more refined measurement procedures. The theorems on channel capacity have led to work toward channel

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[1] Shannon and Weaver, op.cit., pp. 115-16.

improvement and better adaptation to the needs of the source. Redundancy has been recognized as an often effective means of combating noise. The decoding process required at the receiver level has increased recognition of the need to keep the receiver (or receiver-transmitter) in mind when formulating messages. The model and related theoretical tenets have proven to be fertile ground for formulation of new conceptualizations and improvement of old ones.

Weaver began an array of attempts to elaborate upon Shannon's work and/or extend its applicability. Rothstein examined the Shannon formulation with an eye toward establishing the relation between measurement theory and communication.[1] Several efforts were made to specify what happens to the individual receiver (or destination) when a message is received.

Odgen and Richards were interested in the relationships which hold between symbols (or messages), thought, and the referents for symbols.[2] Their model symbolized a causal relationship as extending from the symbol to the thought of the person receiving the symbol. Other causal relationships were seen to extend from the thought to the referent. Apparently, the reaction to the message or symbol arises from the thought process which establishes a causal relationship to some referent. The relationship between the referent and the symbol,

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[1] Jerome Rothstein, Communication, Organization, and Science (Indian Hills, Colorado: The Falcon's Wing Press, 1958).

[2] C. K. Odgen and I.A. Richards, The Meaning of Meaning (New York: Harcourt, Brace and Company, Inc., 1956).

according to the authors, is an imputed one. They did not elaborate upon the concept of "thought," a damaging omission. However, directions for effective communication are suggested by their conclusion that thought processes depend upon the receiver's personal traits, his social environment, etc. and by their emphasis on the imputed relation between the referent and the symbol.

Osgood, having an interest in the effect of a message on the individual, developed a model based on learning theory.[1] According to his formulation, the message may be subjected to decoding, interpreting, and encoding processes by the individual. The stimulus (symbol, message) is received by the individual at the sensory and motor skill level. A response may occur directly or go through one or more somewhat more complicated processes. After reception, the stimulus may be acted upon by a set of intervening variables and thus, in some ways is unique to the individual. More often, however, the stimulus is fed to the more complex seat of the central nervous system where meanings are assigned and ideas considered. This is the interpretation process and may be visualized as constituting the end of the decoding process which began with reception of the stimulus, and the beginning of an encoding process when the response involves the creation of a message, an overt response.

Minnick developed a model along the Osgood line of approach with more emphasis on the perceptual processes of the individual.[2] However,

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[1] As presented in Wilbur Schramm, The Process and Effects of Mass Communication (Urbana: University of Illinois Press, 1954), pp. 11-12.

[2] Wayne C. Minnick, The Arts of Persuasion (Boston: Houghton-Mifflin Co., 1957), p. 39.

his model made no attempt to show schematically how the stimuli to which the individual is exposed affects his final perception.

Each of the three models, the Odgen-Richards, the Osgood and the Minnick have a characteristic in common--none deal with the complete communication process as does the Shannon-Weaver model with its source, message, channel, and receiver. The usefulness of the three models rests in the fact that each model was constructed to describe a specific aspect of the total communication process.

Johnson developed a model which attempted to show the complete process in communication between two persons.[1] He emphasized that communication is not one way, but is actually a constantly changing process in which the source can become the receiver and vice-versa. In focusing on physical attributes, Johnson abstracted from attitudes, the social situation, message organization, speaker skills, etc. as they condition the effectiveness of communication acts. His model is weakened by the absence of any attempt to specify the impact of physiological factors at the source or receiver level on the encoding or decoding processes.

A model developed by Bryant and Wallace also viewed communication as a process and incorporated an interesting emphasis.[2] They pointed out that in a speaker-listener relationship, a process is at work within both speaker and listener as well as between the two parties. The

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[1]Wendell Johnson, "The Fateful Process of Mr. A Talking to Mr. B," How Successful Executives Handle People (Cambridge, Massachusetts: Harvard Business Review, 1953), p. 50.

[2]Donald Bryant and Karl Wallace, Fundamentals of Public Speaking (New York: Appleton-Century-Crofts, Inc., 1960), p. 15.

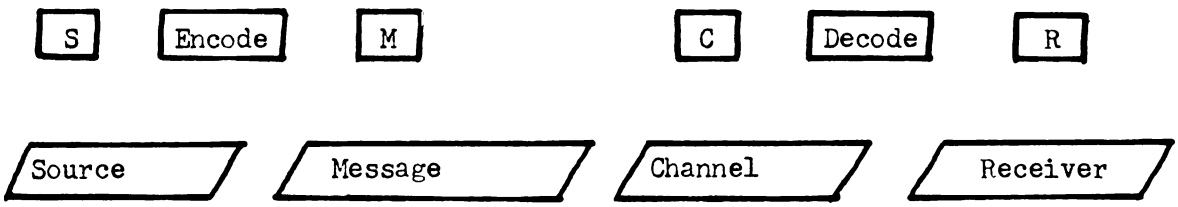
reversible nature of communication is emphasized by a suggestion that the listener's response serves as a stimulus to the speaker. What is often called "feedback" seems to have emerged in this conceptualization.

The Johnson model and the Bryant-Wallace model both treat communication as a two-way process. Neither attempts to describe the nature of the message, however, and neither attempts to move beyond the face-to-face, two-person situation in generality. The stage was being set, by these efforts (and others), for a formulation which adopted the concept of a total process as appropriate to communication.

The S-M-C-R Model

This model, developed by Berlo, considers all basic parts of the total process of communication, the elements which all communication situations have in common.[1] His frame of reference was primarily person to person, and carried a decided psychological overtone. Because

Fig. III-2.--The S-M-C-R model



[1] Berlo, op.cit., especially Chapter 2. This model is perceptively discussed in Erwin P. Bettinghaus, "The S-M-C-R Model of Communication," Research, Principles, and Practices in Visual Communication, Michigan State University, 1960, pp. 29-32.

the complete process is considered, extension to other communication situations is not overly difficult. The psychological emphasis is useful in examining the role, possible pitfalls, etc. of individuals acting as source or receiver. As suggested when the Shannon-Weaver model was discussed, the information source and the transmitter are combined and jointly referred to as "source." A similar statement would be in order for the receiver and destination of the Shannon-Weaver model. This is typical of personal communication; the individual acts as the information source and transmits symbols via his motor skills. The receiver, in the Berlo model, is the destination and the signals are received via sensory processes.

By examining the roles of these basic components of the communication process, many of the requisites to effective communication and/or impediments to such effectiveness could be delineated. The model has possible deficiencies, however, and an attempt to reveal and discuss these deficiencies has priority.

Berlo does not specify the types of sources which can produce messages. His formulation obviously focuses upon the individual person as the source. However, groups of persons, institutions, and even a governmental body may operate as sources, and the communicative output of such entities is often viewed as coming from a single source by the receiver(s). This shortcoming of the model, if it is a shortcoming, is not seriously damaging. The type of channel employed as a medium of transfer may vary as the form of the source varies, as may the processes and/or reactions at the receiver level. Such a reorientation of perception is easily achieved. From what could be called a

deficiency comes the general but quite important conclusion that the abilities, characteristics, and/or capacities of the various components need to be as nearly matched as possible for effective communication.

Perhaps more damaging is the tendency of the S-M-C-R model to permit the implication of linearity of process. The casual examination would suggest that the message is formulated at the source level, encoded to symbols according to the needs of the channel to be employed, and conveyed to the receiver where the message is decoded and absorbed. The tendency to view this as not only a linear process, but one which is performed in discrete stages of activity, is inviting. Such imposed simplicity is deceiving, however. This view destroys many pertinent facets of the process concept which emphasizes the continuous and dynamic nature of the communication act. Commensurate with the suggestion of linearity is the added implication that the process is one-way. Communication is seldom if ever a one-way street; the response is often in the form of a message conveyed back to the original source (as the role of source and receiver are effectively switched).

Effective communication, in the absence of purpose, is inherently difficult to achieve. Berlo's model does not bring this point to focus. Unlike mechanical systems of communication, the subjective thought capabilities of the human mind must be considered. The individuals who play the role of source and receiver tend to act only when they have a purpose in doing so.

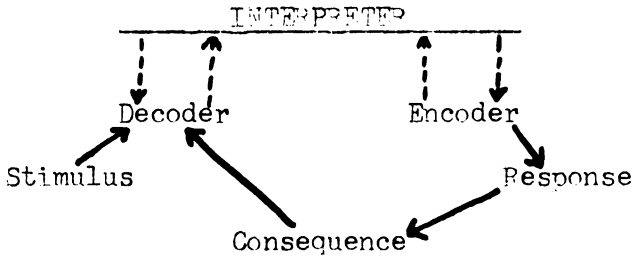
To this point, the S-M-C-R model has been examined in search of deficiencies. Little notice has been made of the many contributions it has to offer. Berlo's exposition and the brief appraisal by Bettinghaus indicate these contributive aspects. The purpose here is

to build toward a model free of any apparent deficiencies, the model to be used to portray the requisites of effective communication in a more encompassing environment. When such a model is completed, the S-M-C-R model and the insight it provides will be basic components.

The Interpreter Model

Berlo developed a second model in an attempt to link the learning process with the process of communication in human behavior.[1] Ex post, it appears he offset many of the possible deficiencies in the S-M-C-R model. This model, as presented in Figure III-3 in most simple form, will be seen to facilitate understanding of the basic aspects of human communication. The potential for learning begins

Fig. III-3.--The Interpreter model--simple form



upon receipt of a stimulus. Before learning can take place, the stimulus has to be decoded and interpreted by the individual. Decoding will typically involve associating an incoming stimulus with ideas and associations possessed by the individual and in light of patterns of stimulation received in the past.

Interpretation is closely linked to the decoding process. The decoding mechanism passes along information to the interpretative

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[1] Berlo, op.cit., especially pp. 73-105. For an evaluation, see Erwin P. Bettinghaus, "The Interpreter Model," Research, Principles, and Practices in Visual Communication, Michigan State University, 1960, pp. 33-37.

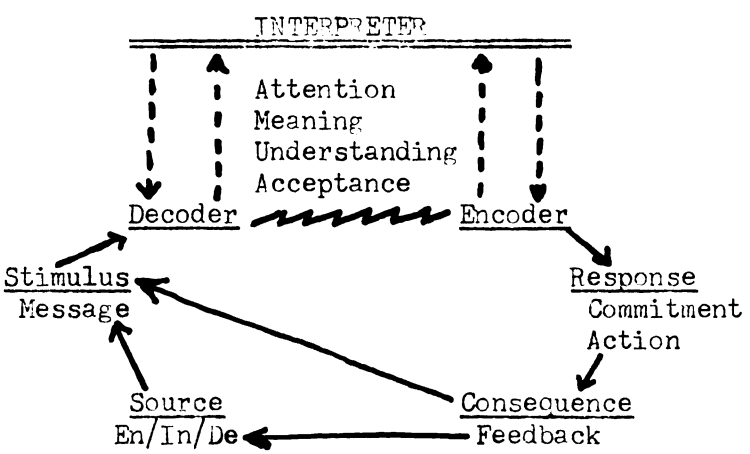
mechanism. The interpreter, in turn, helps determine what is perceived and how it is received.

Some response must be encoded after interpretation has taken place. This is a complex process; many attempts may be required before a "suitable" response is developed. The response may be overt, covert, or both.

The consequence of the particular response or responses which eventually emerge is pivotal in importance to the learning process. If the consequence is rewarding, then a similar stimulus could be expected to incite a similar response at some later date. Not only must the consequence be rewarding, however; it must be rewarding in relation to the effort required in producing the particular response. Berlo suggests human beings follow the dictates of a principle of least effort, meaning individuals will respond to any situation with the minimum effort required for some expected reward.

When expressed in more complete terms, as shown in Figure III-4, the model is only slightly more complex.

Fig. III-4.--The Interpreter model--extended form



Discussion to this point has been largely receiver-oriented. This unnecessary restriction is removed and the total process made

complete by introduction of the source in Figure III-4. The mere placement suggests the source may affect the stimuli he transmits by observing receivers' reactions to previous stimuli. Since the source may be a receiver, he too is attributed the elements of Decoder (De), Interpreter (In) and Encoder (En).

The added words, attention, meaning, understanding, acceptance, commitment, and action may be viewed as possible responses of the receiver to any message. The first four, attention through acceptance, involve internal responses which are essential to communication. Before communication can occur, the stimulus emitted by the source in the form of a message must gain the attention of the receiver. Some meaning must be given the message, and for this to occur, understanding is essential. In many instances, the desired response goes beyond this and acceptance on the part of the receiver is important.

Commitment and/or action are two, often externally visible, responses which the source may desire. Commitment typically involves avowed support or agreement with some contention; action may involve an extended response in that the receiver may act in support of the contention, etc.

The introduction of feedback injects the possibility of interaction, a communication characteristic which was not stressed in the S-M-C-R model. Direct feedback may occur when the source is able to observe the responses of a receiver and the consequences of those responses. A face-to-face situation would be a typical example. Indirect feedback occurs when the source does not have direct contact with the receiver, but observes the results of his actions, etc.

The extended model shows a causal relationship between the consequence and the stimulus. This model focuses upon the interpreter (the individual receiver) and this causal relationship embodies the suggestion that the receiver may, by recalling the consequences of previous responses, alter his interpretation of, and reaction to, the same stimulus at a later date.

The remaining addition to the model is the jagged line between the symbolic representations of the decoding and encoding processes, the line being used to represent habit. This is a "bypass" of the interpretation process whereby a stimulus can be received and a response encoded immediately without cognitive process. A strong habit can present a serious obstacle to effective communication. If such is the case, a way must be found to evoke interpretation. Either a decrease in effort or an increase in reward, or both, might suffice to "break the habit."

Viewed overall, the interpreter model in its extended form suggests that communication sources will always be interested in (1) achieving a given response but with a different stimulus or stimuli, or (2) achieving new or different responses from old stimuli. Achieving either of these objectives means not only that communication has been achieved, but that learning has taken place.

The Interpreter Model continues the march toward a model which is capable of correctly depicting the communication act as a process. The implication of linearity which was possible in the S-M-C-R model is largely alleviated. The possibility of learning is stressed. Like the S-M-C-R, this model moves beyond the restrictive bounds which prevail when only one element of the total process is considered.

Introduction of the feedback phase promotes a perspective of the communication process as one characterized by interaction and thus the possibility of adjustment, adaptation, and change. The emphasis on a two-person situation remains however, and insofar as this constitutes a barrier to the model as a tool of understanding and analysis, is yet to be corrected.

The Westley and MacLean Model

According to Westley and MacLean, they were "trying to develop a single communications model which may help to order existing findings. It also may provide a system of concepts which will evoke new and interrelated research directions, compose old theoretical and disciplinary differences, and in general bring some order out of a chaotic situation."[1] The extent to which they accomplished these objectives is open to question. There seems to be little doubt, however, that their model makes a significant contribution to the understanding of communication situations beyond the relatively simple two-person, face-to-face situations.

The Westley-MacLean Model begins from a relatively simple base. Visualize a person B who is faced by numberous objects of orientation (X_1 -- X_n) which are selectively perceived by B (note the sketch).[2]

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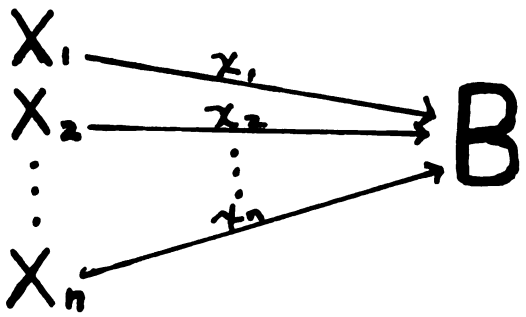
[1] Bruce H. Westley and Malcolm S. MacLean, Jr., "A Conceptual Model for Communications Research," Journalism Quarterly, Vol. XXXIV (Winter, 1957).

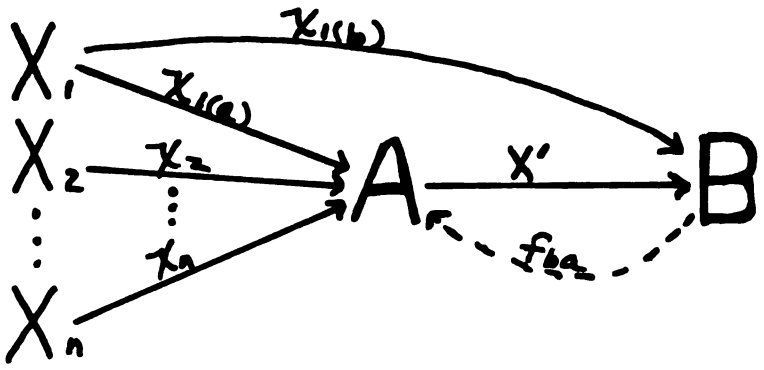
[2] Westley and MacLean report their conceptualization primarily in terms of individual persons. They point out, however, that the model is not restricted to individuals in level of generality.



Introduce person A who transmits something about an object X_i to B. The authors suggest that when A communicates to B about X_i, (other things being equal) systematic changes in the system can be predicted. For example, if B likes A, B will develop a perception of X_i more similar to that of A than before the communication act. The question arises, then, as to whether such a conception can be extended to mass communication situations.

There are basic distinctions between face-to-face and mass communications situations. First, face-to-face communication involves more sense modalities. As a result, immediate feedback is possible, and this is the second basic difference. Is the possibility of feedback necessarily precluded in mass communication situations?

To B, the world consists of a confusion of X's, and these X's may include A's. B must orient toward X's selectively, but the mature B does not orient toward any X_i alone, but simultaneously toward both A and X_i. B, then, does not orient toward and X_i alone on the basis of its intrinsic capacity to provide satisfactions and help solve problems, but also with respect to the relationship between A and X_i. A and X_i, accordingly, relate systematically to B. The process may be schematized as follows:



The X's are selected and abstracted by communicator A and transmitted as a message X' to B.

B is capable of receiving and acting upon information transmitted to him which relates to A's and X's in his own immediate sensory field.[1] This B must do if he has a need for information, attainable from transmitted messages, as a means of orienting himself to his environment and/or securing problem solutions and need satisfactions. But what of A's and X's relevant to such orientation but lying outside the immediate reach of B (as information which would be relevant but of which B is not aware). Westley and MacLean introduce another role here, the C-role.

According to Westley and MacLean, C is conceived of as fulfilling a role which acts to (1) select the abstractions of X_i appropriate to the needs of B, (2) transform them into some symbolic form containing meanings shared with B, and (3) transmit such symbols by means of some channel or medium to B.[2] The relationship can be schematized as follows:

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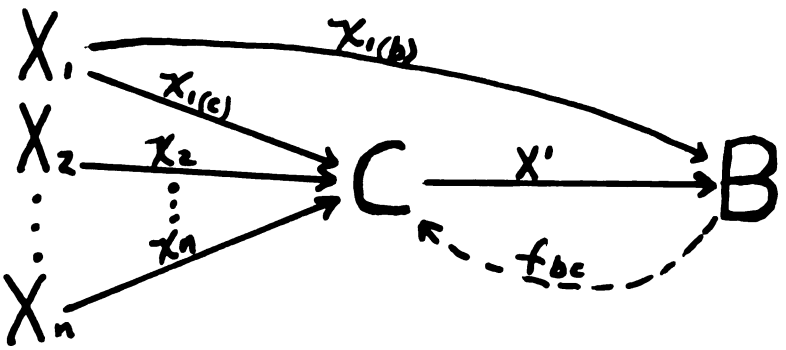
[1] The person-to-person orientation is evident here. This approach can be easily generalized, however. B can also be viewed as capable of acting upon any message of which he is aware, even though it may be out of the person-to-person context and transmitted via mechanical means (as a written message).

[2] Westley and MacLean, op.cit.



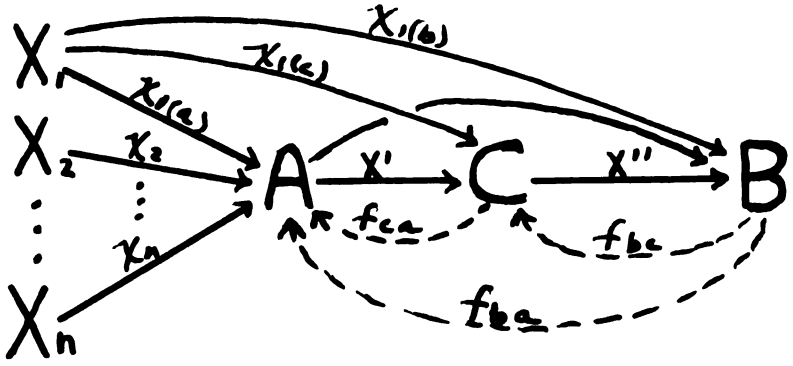
As noted, the selections by C are necessarily based in part, or should be so based, on feedback (f_{bc}) from B.

The question can legitimately be raised as to why C would choose X's which meet the requirements of a B. C is <u>motivated</u> to do so, and this is an important point. The C-role can survive only to the extent that it is fulfilling needs of entities filling the B-role. As Westley and MacLean suggest, a B is a selector among the offerings of various C's, meaning the C's must compete for the attention of the B's. To survive, the C-role must perform a useful service by (1) bringing to B information of which he would otherwise not be aware, or (2) evaluating the information of which B is aware and transmitting it in more useful form. Conversely, the entities comprising the B-role would be expected to return to those C's which have historically proven capable of providing need satisfactions and problem solutions.

The model is made complete by reintroducing the A-role in the presence of the C-role as in Figure III-5. The relationships are a bit more complex, but the basic concepts remain. Note that A is receiving feedback from B directly and from C as an interpreter of the needs and receptiveness of B.

The C-role is typical of many communication situations. For example, the C-role may be the role of the wire editor on a newspaper.

Fig. III-5.--The Westley-MacLean model



The editor takes the information from the wires (the X's) which has been encoded and transmitted to the editor by the wire services (the A's). The editor is charged with selecting those messages which will fill the needs and desires of his readers (the B's). B has news items available which he would not otherwise receive and in a form tailored to his capabilities. The effect of the C-role is to provide B with a more extended environment.

The messages handled via such a relationship as schematized above may be either purposive or non-purposive. A purposive message is one originated by A to modify how B views an X. Continuing the analogy, a newspaper editorial concerning a bond issue would be purposive if it argues either the pro or con of the issue. A non-purposive message is one which is transmitted directly to B or through a C and in absence of any attempt by A to influence B. A report on the results of the vote on a bond issue, with no editorializing, constitutes an example.

The distinction between purposive and non-purposive is potentially troublesome. Many students of communication, including Berlo, consider attempts to influence, to affect a response, as basic to communication efforts. The idea of non-purposive communication then seems inconsistent.

To avoid confusion, another way of viewing purposive versus non-purposive is suggested. Purposive communicative acts might be considered to be those which are designed to attain a response when the communicator has some awareness of the array of potential and likely responses. When a message is constructed to evoke a response unlike previous responses in similar environmental surroundings, and the communicator is aware of those previous responses, then the communicative act involving that message is purposive. Conversely, the non-purposive communication act is one which has potential of evoking a response, but one in which the communicator seeks a response but not necessarily any particular response from the possible array. The recipient of the message may respond and the communicator never know of the response, especially when the message was directed toward some social group instead of an individual or a few individuals. From this perspective, it appears A can communicate with purposive intent only when he is aware of B and his immediate social environment and/or establishes feedback loops, as f_{ba} or f_{ca}, to gain such awareness.

Another facet of the purposive versus non-purposive problem occurs when some individual, group, etc. must evaluate the activity of the masses. Often, the individual contributor to mass activity either does not realize his actions might become input to a message, or does not consciously intend that they do so. For example, consider a manufacturer who offers a product and wishes to evaluate its acceptability by consumers. The consumer, acting as an individual, will accept or reject the product at the prevailing price. Typically, factors such as income restraints, consumption patterns, etc. will be more important to the decision than any intention of informing the

manufacturer concerning the relative acceptability of his product. Yet, just such a message will be forthcoming when the manufacturer interprets the results of numerous such decisions. The situation is, in a sense, the reverse of the typical mass communication setting. Recall the wire editor's practice of selecting among offerings. Here, the masses do the selecting and in so doing, inform the manufacturer. It should be observed that a slight change in perspective makes the situation more nearly parallel with that of mass communication. View the manufacturer's offering of the product as a message, with consumers' decisions amounting to observable reactions and, therefore, largely non-purposive feedback, and the parallel is obvious. Either approach is productive and useful for conceptual purposes.

The feedback aspect of the model deserves emphasis. It is feedback which assures the systematic character of the ABX or ABCX relationship. If the entity filling the A-role is to communicate effectively with B, information about any changes in B attributable to communications must be available. C must be concerned with any such effects on B to permit adjustments and adaptations to the role of agent for B. Feedback typically originates with B, and may be purposive or non-purposive. In the first instance, B initiates a contact with A or C with the intent of correcting errors in their perception of B. Non-purposive feedback arises when A and/or C observe the reactions of B to the message, perhaps through altered behavioral or decision patterns, when B has no conscious knowledge of providing such information and no intention of doing so.

Westley and MacLean treat the communication act as a process. By introducing the C-role, they moved beyond the restrictive bounds of

a two-person situation and thus achieve needed generality. The model does not attempt to specify what happens within the individual (or group, or mass audience). They were not concerned with the mediating reactions of either the source or the receiver. The model does not investigate the nature or properties of the various messages which might be transmitted. The utility of the model arises from its emphasis on the feedback processes and in its ability to portray the relationships between individuals or groups, facilitating the description of their functions and the analysis of their roles.

An Hypothesized Model

Several models of the communication process, the work of diverse students of communication, have been presented. Many of the models are perceived as deficient in one or more respects. They all suffer from what at present is an impregnable barrier, the concept of process. Each conceptualization, however, has contributed to depth in understanding of the communication process. Each has comprised a stone in what at present is best considered a foundation for the edifice of insight.

What will now be attempted is at most a marriage of the models already considered. The important aspects of the various models will be synthesized into a model which should be more representative of the complete process of communication. From the beginning, this attempt will likely be circumscribed by the inability to achieve the generality desired. Such is typically the case when a model is developed with a specific purpose in mind, or for a specific sub-sector of the total social environment. Under such conditions, the optimal

achievement would be a model characterized by ease of generalization or extension to other spheres of activity.

Bettinghaus talks of the level of refinement of models. Descriptive models identify the elements of a particular process or indicate the areas from which questions may be drawn for future research. An operational model attempts to describe the process in such a way that measurement operations and predictions are possible. A functional model is more than descriptive, attempting to specify certain relationships between elements of the process so that other and new relationships are generated.[1] The level this construction will attain remains to be seen, but is likely to remain largely at the descriptive level. Refer to Figure III-6 for schematized view of the model and explanation of the symbolism employed.

Ideally, a schematized model would be self-supporting in the sense that all relations are logically sound and sufficiently clear to negate the need for lengthy verbal explanation. Working counter to this is the complexity of the communication process--it defies the "simple" explanation. Hopefully, the developed model is a reasonable compromise between the admirable trait of simplicity and the necessary trait of complexity. Brief discussion of the basic components and relationships appears to be necessary and worthwhile.

The perceptual field of the communicator (information source) is the sum total of experience including motivations, emotions, attitudes, and feelings. In particular, the perceptual field typifies the source's

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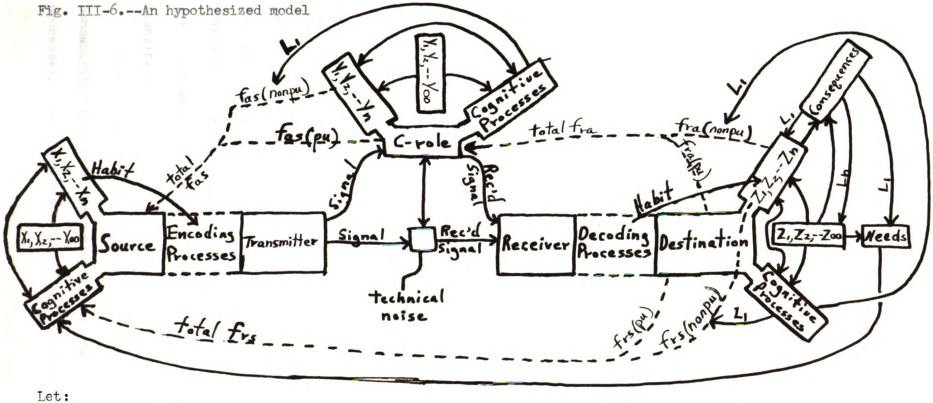
[1] Erwin P. Bettinghaus, "Communication Models," Research, Principles, and Practices in Visual Communication (East Lansing: Michigan State University, 1960).

Fig. III-6.--An hypothesized model



Let:

X_1--X_n be the subset of the total environment, X_1--X_∞, which the source considers most relevant to his activities as communicator at any point in time; Y_1--Y_n be the subset of Y_1--Y_∞ which the C-role performer considers most relevant to his role as agent; Z_1--Z_n be the subset of Z_1--Z_∞ which the receiver considers most relevant to his role as the recipient of the message (where Z_1--Z_n includes the array of possible responses); f_{ra} denote feedback from receiver to the C-role performer (agent); f_{rs} denote feedback from receiver to source; f_{as} denote feedback from "agent" to source; (pu) denote purposive; (nonpu) denote non-purposive; L_i denote a lagged (perhaps causal) relationship of "i" time periods (where "time period" refers to the interval between stimuli or responses); the arrows denote direction of influence.

relationship with the complex of events and surroundings. The process of communication is begun by the source perceiving some event and reacting to it. Perception is selective, however, being conditioned by the availability of events and the context in which they are available, the psycho-physical characteristics of the source, and the social and experiential aspects of the operating environment. For those events which are perceived, not all are formulated as messages. The perception of any event can be viewed as a stimulus which triggers an interpretative phase in the cognitive processes of the source. This interpretative phase, in turn, affects what is perceived and how it is perceived. Some observations from the perceptual field are interpreted as worthy of formulation as messages and are so treated; other observations are not so treated and are stored as information which may affect the perceptual field and/or the cognitive processes of the source.

In the role of source, the perceptual field of interest is that subset considered most important to the role to be played. This may or may not be the total perceptual field. If not, then the source's environment will affect what the relevant subset is to be. "Environment," as used here, encompasses all those elements or aspects of the source's social setting which either circumscribe his role and/or affect it in other ways. Included, among other things, is the source's attitude toward himself and his role within his environmental surroundings.

Note a "habit loop" has been incorporated which will permit the communicator to encode a message without cognitive or interpretative processes. Such messages could arise from verbal expressions, facial

expressions, gestures, etc. which result upon perception of some event (stimulus) and which are autonomous because of prolonged exposure to such an event. Messages which require more elaborate encoding, as a written message, are less likely to bypass all cognitive processes. Such a "bypass" is approximated, however, when the message which is encoded is consistently constructed in the same or similar manner even if contextual change has occurred.

The connection between the communicator, his encoding processes, and the needs and environment of the receiver give the communicator the opportunity to adjust his formulating and encoding activities over time. (This is not feedback.)

Encoding, the process of formulating the message in symbols suitable for transmission over the channel(s), may differ depending upon whether the message is extended to the receiver directly or through an intermediary (the C-role). The channel to be used may vary as may the decoding and interpretative abilities of the agent and the receiver. Either instance calls for a variation in encoding procedure.

Whatever the channel employed, it may be subjected to the type of noise here called "technical" noise. Examples of technical noise are poor enunciation in a face-to-face situation, static interference in a radio signal, spurious symbols or incorrect placement of symbols in telegraphy, etc. The end result is the potential of difference between the signal fed into the channel and the signal which emerges at the receiver level.

When the received message is decoded, the symbolism converted to a more meaningful state, the possibility of a "habit loop" again occurs.

This opens the possibility of a response which is not based upon cognitive or interpretative processes. The message, as a stimulus, may be one which has been encountered many times previously. If a previous response has been reinforced, a repeated or habitual response is, in fact, the "proper" response so long as no new cognitive processes and new interpretative activities are instigated. Learning, in the sense of a change in a stable relationship between a stimulus and the resultant response, must occur for such a habit to be broken.[1]

The destination accepts the decoded message as a stimulus and if the habit loop is not activated, treats it to interpretative processes. (In person-to-person communication, the received signal is viewed as the stimulus and the decoding and interpretative phases, if the response is not habitual, are activated jointly.) The cognitive processes of the receiver[2] are basically a relating of the stimulus to the perceptual field which includes the array of possible responses and the relationships between such responses and the observations, events, consequences, etc. considered relevant to an interpretation of the stimulus. The cognitive processes are conditioned by needs and

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[1]Learning may also occur when an individual employs one or more previously used responses to a new stimulus. The "old" response, previously reinforced and habitualized, was learning at an earlier time. Thus, "the habit loop" bypasses the cognitive seat of action in time period t because the cognitive processes associated with the stimulus occurred in period t-x, $x > o$.

[2]"Receiver" is used instead of "destination" to bring the person-to-person situation within the confines of the discussion.

the environment; the environment in turn is associated with the perceptual field.[1]

To this point, the receiver has been depicted as functioning in a manner similar to the communicator or source. They are similar systems and the respective roles may interchange, given the passage of time or a slight modification of the prevailing contextual relations. The covert reactions to a stimulus are often different, however; the reaction of the source is typically the encoding of a message while the receiver may react without having any conscious intent of encoding any message. (Observable responses or reactions to the consequences of a response often emerge as a stimulus-message to the initial source.)

The consequences of a particular response are crucial to the receiver, serving to initiate cognitive processes and motivate learning, or perpetuate habitual action when the consequence is rewarding. Basically, the receiver rebels against increased uncertainty and tension-creating stimuli. To offset such uncertainties, he seeks to impose a structure, to give meaning to his environment. This may be done via habitual response or by restructuring the perceptual field. The theory of congruity in communication by Osgood and Tannenbaum[2] and Festinger's theory of cognitive dissonance in human behavior[3] both

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[1] As with the source, "environment" is used as an encompassing term, denoting all the constraints, incentives, etc. arising from the social habitat of the receiver.

[2] Charles E. Osgood and Percy Tannenbaum, "Attitude Change and the Principles of Congruity," The Process and Effects of Mass Communication, ed. Wilbur Schramm (Urbana: University of Illinois Press, 1954), pp. 251-60.

[3] Leon Festinger, A Theory of Cognitive Dissonance (Evanston, Illinois: Row, Peterson and Co., 1957).

deal with this phenomenon. Schramm has suggested the following as a predictor of attention paid to a communication (a stimulus):

$$\text{Fraction of Selection} = \frac{\text{Expected Reward}}{\text{Expected Energy Required}}$$

He expanded the idea to include the likelihood of interpretation and learning after perception of a message as follows:[1]

$$\text{Fraction of Decision} = \frac{\text{Expected Reward}}{\text{Expected Energy Required}}$$

The numerator in each instance could as well read "expected reduction in uncertainty." In either form, the generalizations emphasize the importance of consequences and <u>expected</u> consequences in securing the attention and consideration of the receiver. Such expectations are based on an accumulated store of knowledge about responses to similar stimuli in the past and the perceived relation of the stimulus to events the receiver perceives as important in his operating environment.

The receiver, considered as an operational complex upon the receipt of a message, has many dimensions. The receiver's cognitive processes are affected by his needs, since perception and interpretation are selective, and vice versa. The environment and the cognitive seat of action are related via a two-way bond of influence. The environment is an input in the scope of the cognitive process and can be affected in turn, via conscious reorganization, by the cognitive processes. The consequences of a response in time period t affect cognitive processes addressed to stimuli in time period $t + x$, $x > o$. In fact, the ability to recognize a consequence and associate it with

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[1]Wilbur Schramm, "How Communication Works," <u>The Process and Effects of Mass Communication</u>, ed. Wilbur Schramm (Urbana: University of Illinois Press, 1954), p. 19.

specific responses reouires cognitive activity. Within the receiver as an individual, the process is complex. The complexity multiplies when the "receiver" is an audience, a social group, etc. Social esteem, status, prestige, and other value-related attributes which arise from affiliation with others, perhaps a reference group, affect the individual as a receiver. A particular response may be counter to how an individual, without the group influence, would have acted. The environment factor in the model is considered to incorporate such varying facets of the receiver, but will seldom suffice without further elaboration.

The C-role--the intermediary--probably requires less explanation than any other basic part of the model. The introduction of this role into the system suggests that the receiver will be receiving messages from this agent as well as the source. The obvious result is an extension of the receiver's environment, an extension and likely reorganization of his perceptual field, and possibly a modification of needs (the existence of the C-role may have been a need).

The agent who performs the C-role may receive signals from the source, perhaps in a form unlike those encoded for the receiver. Since a channel is employed, the possibility of noise arises, meaning the signal as interpreted by the agent may differ from the signal encoded by the source. Those messages transmitted through the agent, even if they concern the source, are likely to be perceived differently by the receiver. The source may be given the status of an element of the receiver's perceptual field, a relational X_i. If this is so, a message which was purposive when encoded by the source may

be perceived as a non-purposive message, related to the source, when perceived by the receiver.

The C-role will survive so long as receivers consider it necessary. Relative to dealing directly with the source, this would seem to require an increase in reward for the receiver(s) and/or a reduction in effort or energy which need be expended upon receipt of a message. To the extent the agent fulfilling the C-role recognizes this, he is motivated to send out signals which fit one or both of these criteria. This means the signal may be different in important respects from the message encoded by the source, the differences being designed to facilitate the agent's relation with the receivers. The C-role, then becomes a "filter" which interprets for the ultimate receiver and passes on the information which is relevant to the receiver's decision processes[1] in a form adapted to the receiver's capabilities. Cognitive processes by the agent are involved and must be a function of the needs and environment of receiver and source, and to the extent this is known, the array of possible responses by the receiver and intended effects by the source.

To this point, the basic elements of the model have been considered. The exposition has likely been guilty of the two possible shortcomings of Berlo's S-M-C-R model, even though this model appears more elaborate. The treatment may have implied that the communication process is linear and carried out in discrete stages, which is not the case at all. Too, the discussion of the model has not made adequate provision for interaction between the components of the model.

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[1] A decision process is, of course, a response. It may involve both covert and overt "responses" if the decision is to take some specified course of action.

The feedback loops permit the essential interaction and help to destroy the false implication of linear and discrete stages of activity. The basic feedback loop is the "total f_{rs}" between the receiver and the source. This "total" is comprised of purposive and non-purposive feedback. Purposive efforts by the receiver involve a cognitive process and arise typically from reported perceptions of the incoming stimuli or from the consequences of the responses. Non-purposive feedback is essentially observation by the source of receivers' responses. The consequences of the response(s) may enter as a lagged variable, with the consequences in time period t becoming input to cognitive processes in time period $t + x$, $x > o$. In time period $t + x$, the response may differ from that of time period t, even to the same stimulus, because of the reaction to the consequence in period t.

The other feedback processes require similar interpretation. If the agent is to be successful, he must be informed as to how the receiver is faring. The feedback is from receiver to agent, but the agent is prone to establish such feedback routes when none are present or enlarge and improve upon existing ones. Again, the feedback may be either purposive or non-purposive. The feedback loop between the receiver and the agent completes a full cycle of information between the two. The agent, acting as a source, can move through his channel(s) to provide the receiver with information, answer questions, resolve uncertainties, etc. which emerge from the f_{ra} feedback loop.

There is also a complete cycle between the original source and the agent, comprised of the f_{ac} feedback loop and the information

channel from the source to the agent. To be a successful agent, the party in the C-role must also have awareness of the needs, propensities, abilities, etc. of the original source or party A. When the efforts of A as a source are not, for various reasons, properly aligned with the needs of the receiver or party B, the agent may be able to perceive the difficulty and suggest remedial action.

Overall, the feedback loops comprise necessary components if the act of communication is to be viewed as a process, as a system of action. It bears repeating that such a process is dynamic and continuous, is always changing and adjusting. A graphic model cannot picture these properties, nor can a verbal discussion fully explain them. Still, this perspective must be fostered, fed, and developed if understanding is a goal.

Requisites of Effective Communication

The basic requirements of effective communication can best be presented by surveying the likely results if certain conditions are not met. There are several rather broad positions which may be taken, positions which are not restricted to possible shortcomings in any one basic aspect of the process. Among these are the following:

1. If the feedback loops are missing or functioning poorly, barriers to effective communication arise. The barriers may be (a) misperception of role by A (the source), B (the receiver), and C (the agent), (b) lack of recognition of the needs of B by A and/or C, (c) lack of alignment between the efforts of A and C and the needs and capabilities of B, etc. Overall, the interaction required for

coordination of effort would be missing. Without provision for interaction, the "system" is unable to effectively adjust and adapt to changing social forces and environmental structures.

2. If the C-role is not being performed, there is potential of less coordination between A and B arising from (possible) problems in message transmission and asimilarity of interpretation.

3. Marked differences in the perceptual field of A and B inhibit effective communication.[1] A perceives events, relationships, etc. in his perceptual field and encodes, in symbolic form, a message. If there is no technical noise, the symbolized message reaches the receiver exactly as it left the transmitter of the source. B is faced with the task of decoding the message, of attaching a meaning to the symbols <u>in terms of the events and relationships in his own perceptual field</u>. If the set of relations B establishes between the symbols and the elements of his perceptual field is not the same as the set established by A, problems arise in the form of lack of any response, unexpected responses, etc.

4. The purposes of any combination of A, B, or C may be incompatible. If such occurs, effective communication is unlikely.[2]

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[1] This is similar to the problem of non-equivalent vocabularies for source and receiver as discussed in some texts.

[2] Where effective communication is here defined as the ability of the source to effect the, or a, desired response on the part of the receiver.

5. The habit loops may become entrenched. If such occurs at the source level, the same message is encoded regardless of changes in the environment and needs of the receiver. An entrenched habit loop at the receiver level prevents B from responding selectively or critically to a message. Learning may be denied, either because of the inability to incite new responses to the same message or to attain the same response from a different message. Regardless of the location, a habit loop threatens the ability of the system to adapt to new needs or surroundings.

The points above are of a general nature. By dealing at the level of basic components, more insight can be gained as to the requisites of effective communication. Again, the dangers of forgetting the process is "stopped" are present and should not be ignored.

The Source

There are several aspects of the source, taken as an entity, which affect the effectiveness of communicative acts. The more important ones will be discussed briefly and basic references cited.

First is the notion of source credibility. The credence awarded a message by any receiver seems to be a function of (1) the degree of expertese granted the source, and (2) the perceived "trustworthiness" of the source. Limited investigation suggests age, educational level, whether the source is seen as filling a position

of leadership, and similarity of social background as factors affecting the degree to which a source is perceived as an expert.

A source can be viewed as an expert, however, and still be unable to evoke desired responses. The receiver must have a degree of confidence in the source's intent to communicate the most valid assertions, must consider the source trustworthy. Acceptance of the viewpoint presented by the source and/or some desired course of action on the part of the receiver become more likely when the source is not perceived as trying to manipulate receivers to his, the source's, benefit.[1] Studies have shown that a differential in response exists between low and high credibility sources when both present the same message. This differential tends to disappear over time (one study suggests four weeks), but can be largely reinstated by repeating the introduction or other means used to promote the credibility of the sources when a "delayed test" is conducted.[2] Apparently the difference in response is not in the amount learned, but in acceptance and to some extent, retention over time.[3]

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[1] An exception occurs when the message is (or could be) fully accepted on its own merits; in such a situation, a highly credible course can have little added effect on acceptance.

[2] C. I. Hovland, A. A. Lumsdaine, and F. O. Sheffield, Experiments on Mass Communication (Princeton, New Jersey: Princeton University Press, 1949).

C. I. Hovland and W. Weiss, "The Influence of Source Credibility on Communication Effectiveness," Public Opinion Quarterly, Vol. XV (Winter, 1951), pp. 635-50.

H. C. Kelman and C. I. Hovland, "Reinstatement of the Communicator in Delayed Measurement of Opinion Change," Journal of Abnormal and Social Psychology, Vol. XLVIII (July, 1953), pp. 327-35.

[3] W. A. Weiss, "A 'Sleeper' Effect in Opinion Change," Journal of Abnormal and Social Psychology, Vol. XLVIII (April, 1953), pp. 173-80.

A second facet of the source which can affect his ability to communicate are his, the source's, communication skills. Berlo speaks of encoding skills (writing and speaking), decoding skills (reading and listening) and a skill crucial to both encoding and decoding, thought or reasoning.[1] He goes on to suggest these skills not only affect the source's proficiency at the mechanical aspects of communicating, but also the ideas which are available and the ability to manipulate those ideas, place them in perspective, and employ them.

Although Berlo separates it, knowledge level would seem to belong within the confines of communication skills. The knowledge referred to here is knowledge of the communication process itself. As Berlo puts it, "knowledge of communication affects communication behavior."[2]

Having extended the concept of communication skills, there would be a number of areas worthy of discussion. Here, treatment will be restricted to two basic areas, those of redundancy and empathy.

Redundancy is basically repetition or reiteration to promote correct perception of the message by the receiver. This is a message characteristic, often related to channel capacity and involving attempts to statistically match the message and the nature and capacity of the channel.[3] However, the concept has meaning outside the

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[1] Berlo, op.cit., pp. 41-42. Recall Berlo's "Interpreter Model" when the source was perceived as accepting a stimulus from his perceptual field and subjecting it to encoding, decoding, and interpretative processes before a message was produced.

[2] Ibid., p. 49.

[3] For example, see Fazlollah M. Reza, An Introduction to Information Theory, (New York: McGraw-Hill Book Co., Inc., 1961), p. 108ff.

more technical or mechanical framework. Where the source is concerned, the basic requirement is that he be able to recognize the potential of redundancy and employ it where the probability of correct perception by the receiver will be bolstered. The procedure involved and the potentiality of the concept will be discussed in more detail when the requirements of an effective receiver are treated.

Berlo defines empathy as "the process through which we arrive at expectations, anticipations of the internal psychological states of man."[1] Again, insofar as the source is concerned, the issue is not so much understanding how empathy may be accomplished, but in the recognition of need for the activity embodied by the concept. Every source carries an image of his receiver. Feedback nurtures this image. Surveys are conducted to establish a more specific image of receivers. A source's expectations tend to influence the way he communicates, extending to conceptualization of need, encoding activities, message content, etc. Even thinking of the receiver requires the development of expectations.

There is no concensus as to how empathetic ability can be developed, primarily because there is no concensus as to its basic nature. There are two popular theories about the basis for empathy, both presenting physical behaviors produced by man--messages--as the basic data of expectations. The two theories also agree that predictions concerning the internal psychological states of man are based on observable physical behaviors, that man makes such predictions by using symbols

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[1] Berlo, op.cit., p. 120.

to represent these physical behaviors and by manipulating these symbols. Beyond this, the two theories differ.

An inference theory of empathy is psychologically oriented, based on the concept of "self." Theoretically, man observes his physical behavior directly and relates this behavior symbolically to his own internal psychological states. By observing the physical behaviors of others, the individual then makes inferences about the feelings, thoughts, emotions, etc. of others on the basis of the symbolic relations established within the "self."

The role-taking theory of empathy is based on other tenets. Here, the concept of "self" is developed through communication. This development advances through stages which begin with imitation, and proceed to adoption of other people's roles with a degree of understanding, usually with physical adoption. The third stage involves symbolical adoption, via mental versus physical processes. Ultimately, after the individual interacts with, and adopts the role of, many people, he begins to generalize the role of others. Berlo defines this "generalized other" as "an abstract role that is taken, the synthesis of what an individual learns of what is general or common to the individual roles of all other people in his group."[1] Berlo goes on to argue that man employs both approaches, first adopting the roles of others and on this basis, develops the concept of "self." This process goes on continually and is constantly shaped and adjusted by rewards when inferences are correct and failures (such as social castigation, failure to receive promotion, etc.) when the inferences

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[1] Ibid., p. 127.

are wrong. Obviously, such development is not independent of the individual's social setting and the degrees of rapport with the persons, groups, etc. of that setting.

The social-cultural system within which a source operates constitutes a third determinant of source effectiveness. Cherry speaks of communication networks within a social setting, suggesting the "true" communication network (the one actually employed) may vary significantly from the "formal" network (the one set up for use).[1] Murphy, as noted earlier, employs an entire volume for the formulation of adaptive processes in economic (social) systems.[2]

Berlo attempts to relate communication behavior to the working of a social system.[3] He suggests:

1. Social systems are produced through communication. Via role-taking, interaction, a group of people become interdependent. Uniformities of behavior, interdependence of goals, pressures to conform--all are produced through communication among members. Overall, the availability of communication increases the likelihood of social development.
2. Once a social system has developed, it determines the communication of its members. The social system affects the persons with whom one will be most likely to communicate, the range of receivers for a given individual

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[1] Cherry, op.cit., p. 19ff.

[2] Murphy, op.cit.

[3] Berlo, op.cit., pp. 133-67.

acting as a communicator, the frequency and content of messages, and promotes uniformity of behavior.[1]

3. Knowledge of a social system can help us make accurate predictions about people, without the necessity of empathizing, without the necessity of interaction, without knowing anything about the people other than the roles that they have in the system.[2]

The effective source must learn to recognize and deal with the impact of his own social surroundings and those of his receiver. Understanding of the social setting can become an asset by suggesting the types of responses which might be attainable and the types of messages which might be appropriate. The social setting can become a hindrance, however. Allegiance to the norms of his own social group may prevent the source from understanding the receiver in a somewhat different setting. The social setting may also dampen the communication skills of the source. For example, effective empathic processes usually require that (1) the source is not communicating with

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[1] Berlo here implies a greater stability of social structure than would seem to be appropriate. Role-taking, implicit group norms, etc. certainly affect communication behavior, but given interaction and effective empathic processes, the system can and does change over time.

[2] Again, Berlo seems a bit too conclusive. Such a conclusion could be justified only if the social setting were the only important determinant of behavior. Needs are important and do not always arise solely from the social setting. Too, the developed model permits sufficient flexibility to permit the individual to act in a way designed to change his social setting.

very many people, (2) the source has had prior experience with his receivers and thus has a basis for predictions, (3) the source is sensitive to human behavior, and (4) the source is motivated to interact.[1] All social settings do not, of course, meet the first and second criteria or foster the third and fourth.

To this point, the requisites of an effective source have been presented in rather general terms. More specific points could be made, all of which would be subsumed under one or more of the general requirements of credibility, possession of communication skills, and understanding of the implications of various social settings. Some of the more important and more specific requirements of an effective source, all of which are implied by the model, are:

1. The source must recognize the needs of his receivers if he is to attain desirable responses.
2. The source must recognize the capabilities of his receivers. The decoding process will <u>not</u> be the inverse of the encoding process, even for a technically noiseless channel, if the message is beyond the capabilities of the receiver.[2]
3. The source must use and nurture feedback from the receiver and the agent when an agent is involved. This interaction lays the basis for evaluating responses, guides message adjustments, and modifies the source's perceptual

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[1] <u>Ibid.</u>, p. 134.

[2] This is one source of "semantical" noise, if this term may be used. A typical case would be the receiving of a written message in exactly the form as encoded by the source but attaching a different interpretation. (The relations between certain words and the perceptual field for the receiver are not the same relations as hold for the source.)

field toward consistency with that of the receiver(s).

4. The source must realize that changing social and organizational structures changes the needs of receivers. Consequently, the same observations may call for different messages. Constant interpretation and re-evaluation, not habit, should be the standard of procedure.
5. The source must recognize that the social surroundings affect his own behavior and abilities as a source. This is inadequately indicated in the model by the "environment" factor. The source's attitude toward himself and the role he plays, his perception of the attitude of others and the level of esteem or prestige afforded his position--all these things have bearing on his effectiveness.

The source has been discussed in terms of requisites for effective communication. Any generalized discussion suffers from the lack of an air of realism, from a lack of experiential content. A degree of experiential content will be provided when the specific system under consideration, the livestock marketing system, is conceptualized as a system of communication. More detail will then be provided and many of the subtleties of an effective source-role, the discussion of which would largely be vacuous in a generalized framework, will emerge and take on systematic order.

The Channel

On the one hand, it would seem that effective operations at the source level could be taken as indicative of appropriate choice of

channel. Such is not necessarily the case, however, since institutional arrangements or changing organizational structures may either prohibit the use of what would otherwise be the optimal channel and/or make new channels available. Guidelines are needed to facilitate the choice of channel subject to availability and economic feasibility.

From the statistical theory of communication comes an indication of the importance of the choice of the correct channel. Inevitably, since encoding processes are involved, the activities of the source become a factor in the choice. Cherry says, "The encoding of messages is a process of organization, converting or transforming messages from one sign representation into another, possibly more suited to the type of communication channel employed; and the channel may impose limitations . . . which determine how this coding should be done."[1] Where a choice is available, a channel should be chosen which matches the encoding capabilities of the source and the characteristics of the symbols employed. Shannon's theorem on channel capacity suggests "proper" encoding can reduce the probability of error, even in the presence of technical noise, to an extremely small value. Such statistical guides to channel choice provide only general direction, however, when the symbols to be used are the written word. The statistical properties of the English (or any other) language are not well defined.

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[1] Cherry. op.cit., p. 190. See also Stanford Goldman, Information Theory (New York: Prentice-Hall, Inc., 1953), p. 32ff.

Deutschmann et al. investigated the importance of noise in the channel of communication.[1] In a designed experiment, they found no difference in the amount of relevant material learned in noiseless and noisy channels. However, the channel efficiency scores[2] were significantly higher for the noiseless channel.

Berlo points out the paucity of systematic knowledge about such questions as (1) which channels have the most impact, (2) which channels are most adaptable to the purpose of the source, and (3) which channels are most adaptable to the content of the message. He adds that some generalizations can be made, however, including (1) two channels are usually better than one (a receiver will be more likely to decode a message accurately if he can hear it and see it at the same time), and (2) the receiver cannot, other things equal, retain as much oral information as he can visual,and "hard" content can thus be transmitted more effectively visually.[3]

Hartman addressed himself to investigation of the effectiveness of multiple versus single channel presentations. He concluded that redundant information presented simultaneously by audio and print channels (spoken and written word) was more effective in producing learning than was the same information presented via either channel alone. Hartman also found that interference between channels was possible, which could lead to a reduction in learning relative to

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[1] Paul J. Deutschmann, Lionel C. Barrow, Jr., and Anita McMillan, "The Efficiency of Different Models of Communication," Audio Visual Communication Review, Vol. IX (November-December, 1961).

[2] A measure of the learning of relevant materials relative to the learning of irrelevant materials.

[3] Berlo, op.cit., pp. 65-66.

either channel alone. This occurred when related or unrelated information was simultaneously presented over two or more channels. Hartman concluded that such interference is likely to occur when there is a division of attention among competing channels and the difficulty (either rapid rate of presentation or cognitive complexity) of the information is such that successful alternation of attention is not possible.[1] It should be noted that the experiments from which these conclusions were drawn were based on recognition or discrimination. Care should be employed in generalizing the conclusions to situations requiring recall rather than recognition or discrimination.

Hartman also conducted a review of the experimental work on channel effectiveness. Among his overall conclusions were the following:[2]

> Audio is a more effective channel than print when the information presented is simple and easily understood by the subjects, and for illiterates and semi-illiterates. . . regardless of difficulty of information. Print shows increasing advantage over audio for literate subjects roughly proportional to increasing difficulty in comprehension of the material . . . The accumulated evidence is not sufficient to allow generalizations from the results of comparison of the pictorial channel with the audio and print channels (when each is used independently).

Moving to consideration of multiple presentation combinations Hartman concludes:

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[1]Frank R. Hartman, "Investigations of Recognition Learning Under Multiple Channel Presentation and Testing Conditions," Research on the Communication Process (University Park: The Pennsylvania State University, 1960), Report C, Section 5. Hartman includes a list of 23 basic references.

[2]Frank R. Hartman, "A Review on Learning From Single and Multiple Channel Communications and a Proposed Model with Generalizations and Implications for Television Communication," Research on the Communication Process (University Park: The Pennsylvania State University, 1960), Report D, Section 5. This review includes a listing of 129 references.

> It is apparent that a simultaneous audio-print presentation is more effective than either audio or print alone when the information simultaneously presented is redundant.

Hartman is less conclusive on combinations involving pictorial channels but suggests pictorial-verbal presentations show advantage over single channel presentations.

The work of a number of sociologists has indicated that informal channels often emerge and are quite effective.[1] Among others, the notion of the two-step flow of communication has arisen, suggesting the message is first received by a group leader or influential party and then disseminated to the members of the social group.

Defleur and Larsen concluded that the central function of mass communication is more one of reinforcement of existing individual and cultural practices than one of conversion to new behavior. Apparently, the possibility of reinforcement arises from a selective process by the mass recipients. Many would-be recipients never become such because their attention is never gained. Those who pay attention to a message are often those in sympathy with its content and purpose.[2] The authors suggested redundancy increased the level of communication

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[1] Herbert F. Lionberger, "The Relation of Informal Social Groups to the Diffusion of Farm Information in a Northeast Missouri Farm Community," Rural Sociology, Vol. XIX (1954), pp. 233-43.

James H. Copp, Maurice L. Sill, and Emory J. Brown, "The Function of Information Sources in the Farm Practice Adoption Process," Rural Sociology, Vol. XXIII (1958), pp. 146-57.

[2] Melvin L. Defleur and Otto N. Larsen, The Flow of Information (New York: Harper and Bros., 1958), p. 25.

achieved in their experiment, but at an ever-decreasing rate.[1] They also observed a significant relationship between accuracy of recall and the channel employed. When an individual saw the message, their level of accuracy was significantly greater than when initial exposure to the message was via oral contact with someone else.[2]

The needed guidelines for the choice of channel are, at present, inadequate. Spanning any other generalizations which could be made is the need for the source to consider the nature and content of the message, his own encoding abilities, and the decoding and interpretative abilities of the intended receivers. Then, the following offer at least a degree of guidance:

1. Two channels are typically better than one, especially when the information is of a redundant nature and presented simultaneously.
2. When the content of the message is difficult relative to the abilities of the receivers, the print channel is typically more effective than the oral channel.
3. The use of a pictorial channel in conjunction with a verbal channel may be more effective than either alone. Since the information cannot be redundant, however, the possibility of channel interference emerges and should be kept in mind.

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[1] Ibid., p. 44.

[2] Ibid., p. 203.

The Receiver

The receiver, in a sense, is the most important aspect of the entire communication process. Yet, to discuss the requirements of effective communication with a receiver orientation is difficult, the complications again arising from the nature of communication as a process. The receiver has been a source, and the points made with regard to an effective source could be repeated, but such repetition would not be highly productive. The more productive approach is one which views the receiver as capable of conditioning the entire process, consciously or unconsciously, via the response to a message and/or the reply which is encoded as a message when the receiver becomes source.

The importance of the receiver evolves from the position occupied in the communication process. Regardless of the effort and time employed by the source, the reward is nil if the receiver either ignores the message or makes no response. Consequently, the receiver becomes pivotal in importance and the requirements for effective communication at the source and channel level are framed largely with the receiver in mind. Thus, any requirements which might be listed as relating to the receiver will be seen to have implications for the entire communication process.

It bears repeating that the source and the receiver are similar systems. As was true of the source, the communication skills of the receiver are important. This includes ability to decode, to interpret, and to understand the communication process itself. The need for such skills at both levels is obvious, but the relationship between the skill

levels of the source and the receiver as a vital determinant of effectiveness is less obvious.

This relationship dictates a dyadic approach to analysis. The dyadic approach, as opposed to the monadic approach, emphasizes relationships and de-emphasizes one-party characteristics. The success of a source cannot be predicted on the basis of his skills alone, but only in terms of those skills as related to the skills of the receiver. Individual characteristics are important, but primarily in the context of their relationship to other factors with which they operate conjunctively. Similar statements are in order with respect to the needs and attitudes of the source and receiver respectfully.

The social environment of the receiver is an important determinant of the source's ability to effect a response. Receivers who place the most value on membership in some group seem to be least influenced by communications which run counter to the norms of the group.[1]

The attitude of the receiver toward the source, toward the social surroundings, and toward his, the receiver's, position in those surroundings all affect his activities as a receiver. Attitude toward the source is particularly important; a negative attitude regarding the relationship which the receiver perceives as prevailing may mean a negative attitude toward the message which is disseminated.

The long-delayed discussion of redundancy will now be taken up in combination with consideration of meaning. Meaning is an intangible component of the overall process, but an important concept.

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[1] H. H. Kelley and E. H. Volkart, "The Resistance to Change of Group-Anchored Attitudes," American Sociological Review, Vol. XVII (August, 1952), pp. 453-65.

Berlo suggests the concept of meaning is central to communication, that it can be argued that the major concern of communication is meaning.[1] The basic perception which must be grasped is that communication does not consist of the transmission of meaning. Messages, perhaps in the form of code, can be and are transmitted but meanings are not in the messages; they are in the message users. Communication often breaks down because the source incorrectly assumes that meanings are in words, or whatever symbolism is used, rather than in the people involved. The difference is subtle but important; it is basically the difference between transmitting information and transmitting understanding.

Meanings are learned, and again the importance of skills, attitudes, and social surroundings become important. Meanings are attached to words[2] as the individual progresses through stages of development, both physically and mentally. In the simplest sense, meanings become attached via a stimulus-response type of activity. The individual establishes associations between words and behavioral activities or responses. If the association is "correct," some reward is often involved and the particular word takes on a meaning in terms of a place in the perceptual field of the individual. The development of meanings becomes immensely complex as the individual matures. Intervening variables, social norms and pressures, developed standards of control and behavior, etc. all act to condition the meaning attached

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[1] Berlo, op.cit., p. 169.

[2] The use of words does not restrict the generality of the discussion. Meanings are attached to any other symbols which are employed and will typically be amendable to interpretation in terms of words.

to words, and these meanings are subject to change over time with changes in the individual's operating environment and as he relates words or combination of words to his perceptual field. The mere similarity of process suggests what is indeed the case, that meanings change as a result of communication and, in turn, act to condition communication processes. Berlo summarizes these points as follows:[1]

1. Meanings are found in people, not in messages.
2. Meanings are learned. They are a function of personal experience.
3. We learn words and acquire meanings for them by perceiving a word as related to other words, or objects, or perceptions--for which we already have meanings.
4. We learn meanings for oral sound combinations first, and only much later for written words.

The source is charged with the responsibility of promoting similarity between the meanings he attaches to words as symbols and the meaning attached to those symbols by the receiver.

The model suggests awareness of the needs of the receiver, understanding of the social environment in which the receiver is operating, and the promotion of interaction via feedback as ways of facilitating the desired similarity. Empathy has been suggested as another means by which the source might align his efforts to the capabilities, needs, etc. of the receiver and thus promote symmetry of meaning. In spite of such precautions, however, the receiver may

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[1] Berlo, op.cit., p. 188.

still attach a meaning to words unlike the meaning intended by the source. If such occurs, and it is most probable when the perceptual fields of the two differ, the message received is not the same as the message sent. Semantic noise has arisen and some procedure is required to combat the occurrence of such a disturbing element.

Before the role of redundance can be established, the types of meaning which might prevail require examination.[1] Denotative meaning arises from a sign-object relationship. The word (or symbol) refers to some physical entity or activity which consistently presents some recognizable characteristic as to form, substance, or act. Such meanings are conceptually simple but are difficult to provide in a communication situation in which the source and receiver are spatially separated. In such cases, the two parties cannot have access to a common sign or referent.

Structural meaning is more nearly a relationship between symbols and other symbols. When words are the symbols, this aspect of meaning draws on the redundancy of the language to facilitate the establishment of unique meaning. Unlike denotative meaning, structural meaning need not enter the domain of physical reality--formal reality will suffice. Examples from the English language are the rules specifying the use of number, person, and gender in constructing sentences. These and other rules, the redundant aspect of the language, are usually widely known and practiced. Unique meanings may also be fostered by the way in which paragraphs or groups of sentences are structured. Repetitious summarizing of important points constitute an example of how structure

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[1] Berlo, op.cit., discusses "dimensions of meaning," pp. 190-216.

and redundancy might, when skillfully employed, contribute to attachment of unique and similar meanings.

Contextual meaning is a hybrid approach, using structural characteristics in the sense that attempts are made to predict denotative meanings and those for which we have such meanings. Again, the notion of redundancy comes in.

Connotative meaning, the fourth dimension of meaning, is typically the most troublesome one when communication is the objective. Basically, connotative meaning arises from a sign-object-person relationship. A relationship between some physical object or activity may be established, but on a highly subjective or personalized basis and largely unique with the individual. Berlo, indeed, feels the differences between denotative and connotative meanings is one of degree, that denotative meanings are simply connotative meanings on which we all agree.[1] The highly individual interpretation or attachment of meaning complicates the problem of promoting an understanding at the receiver level consistent with the intentions of the source. Yet, such meanings must often be used, especially when necessity dictates some restraint on length of message. The problem can be alleviated to an extent by understanding of the receiver's social environment, since connotative meanings as established by the individual are a function of his social surroundings--i.e., the connotative meaning is concerned with social reality. Beyond this, the notion of redundancy again becomes important.

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[1] Ibid., p. 211.

Cherry defines redundancy as "additional signs or rules which guard against misinterpretation."[1] As he and other authors rightfully suggest, this is an essential and "built in" property of modern languages. However, redundancy can be carried beyond the level inherent in the language when the need presents itself. Cherry speaks of syntactical and semantical redundancy, the need for which arises from the various disturbances of the external environment, the uncertainties of accent of handwriting, and the inadequacies of language itself. Syntactical redundancy implies addition to a text; something more is said or written than is strictly necessary to convey the message. The need for such additions arises from semantic problems, the inability of the language to foster the same interpretation or attachment of meaning even when the same words are used. The simplest additions would be direct repetition. Generally, however, the repetition is not complete but involves reiteration of important points in different terminology, construction, or phrasing.

The discussion of meaning has incorporated many of the other requisites for success in the communication act. This serves to emphasize the importance of meaning as it is attached by the persons involved and emphasizes as well the need for understanding and interaction between the source and the receiver.

The C-Role

The requirements of an effective performance of the C-role can be presented briefly in the context of the discussion of the other

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[1] Cherry, op.cit., p. 32.

roles. Briefness should not be taken as indicative of lack of importance, however.

Whether the C-role is deemed to be necessary depends upon the relationship between source and receiver, the needs of the receiver, and the receiver's capabilities as a recipient and interpreter of information. The effective C-role serves to extend the receiver's environment and perceptual field, acts as interpreter for messages transmitted by the source, and where the need is apparent, provides additional information to the receiver. Above all, the party fulfilling the C-role must recognize the place of that role within the total sphere of activity. As a service role, it must adjust to even the small changes in organizational structure or other shift in relationships which affect the receiver. As the needs of the receiver change, so too do the activities at the C-role level which will prove capable of meeting those needs.

Recognition of the needs of the receiver is thus essential. Typically, this will require establishing an understanding of the environmental situation in which the receiver is operating, the way he is operating, the information base upon which he is operating, and a subsequent recognition of deficiencies in the information being received or incorrect perception of what such information provides in the way of directives for action. As implied, the C-role will typically be active in situations where information is being transmitted on a non person-to-person basis.

Beyond recognition of needs, the C-role participant must recognize the capabilities of the receiver. The degree of interpretation

and perhaps restructuring of messages needed will be directly affected by the capacity of the receiver to decode, to interpret, and to structure. Concurrently, the C-role participant must understand the technique employed by the source, must be aware of the source's skills and to the extent possible, the subtleties of procedure as practiced by the source. In a situation in which the source disseminates messages to the C-role participant, the C-role becomes a receiver and is plagued with all the problems which tend to promote understanding and meaning at the receiver level which are unlike that intended by the source. Since the C-role participant may then act as source and encode a message to the third party involved, the receiver when the system as a whole is viewed, the potential of noise is great.

Overall, the C-role must be flexible and constantly aware of the needs and capabilities of the source-receiver relationship for which it is an intermediary. If this flexibility and awareness prevails, the agent has the potential of fulfilling yet another requirement--that of a feedback loop to convey information from the receiver back to the source. In situations where the need for the C-role is on rather shaky grounds, the C-role participant may consciously avoid acting as a feedback loop. This situation might arise when the capabilities and perceptual fields of the source and receiver are sufficiently well matched or where the cognitive complexity of the messages is not too high, both situations suggesting communication can proceed without the interpretive and structuring activities of an intermediary.

A Final Comment

The main purpose of this chapter has been to establish a basis upon which the communicative capacity of the beef marketing system (or any marketing system) might be evaluated. In addition, and perhaps more important, the presentation should have fostered a perception which recognizes the importance of interrelation and interactions among participants as a determinant of system performance.

Not all the attributes of a system of communication which have been developed will be directly related to some aspect of marketing activity, nor should any attempt be made to do so. All, however, should contribute to development of a discerning attitude toward marketing and this may be, after all, what is most needed.

CHAPTER IV

BEEF MARKETING AS A SYSTEM OF COMMUNICATION

Introduction

The marketing system for beef was presented in Chapter II, followed by an examination of communication processes in Chapter III. This chapter will focus on the development of beef marketing as a system of communication. More precisely, the marketing of beef will be presented so as to emphasize the inherent communicative processes fundamental to marketing activities.

Such a development is expected to perform two basic functions. First, it should establish a framework within which the beef marketing system can be evaluated as a system of communication. Second, the development should foster perception of the nature and importance of the communicative dimensions of marketing as determinants of system performance.

For purposes of clarity, certain general characteristics of the course of action to be followed will be stated. While many approaches might be taken, the one to be suggested has been chosen as perhaps the most practical and useful.

A Point of Departure

While concerned with communication processes inherent to marketing activities, no attempt will be made to emphasize the use of

terminology which might be peculiar to communication as a discipline. The terminology employed will be that most appropriate to a lucid presentation of marketing activities. The efforts of Chapter III should permit recognition of important communicative properties as they appear.

Price and pricing processes will prove important to the development. It should be noted, however, that the development will not be conducted under the belief that the price system is analogous to the communication system. As will be observed, price per se is a result. As such, price is the culmination of the complex workings of the system of action called marketing. The evolving patterns of behavior and activity are what determine system output and system performance. Price achieves its importance as a referent for the results of such activity. Because it is an important referent, price at one moment in time may become an input to later activities, later patterns of behavior. Other inputs are often involved, however, and may on some occasions be considered more important than price. At the risk of belaboring the point, it might be suggested that the role of price is that of message component and/or a medium by which important results of system activity are transmitted. The price system is a communication system if, and only if, the perspective adopted is sufficiently broad to encompass the workings of the total system of action, not just its output.

No norm with regard to competitive structure of the industry will be employed. Developing a means of improving the level of information to system participants would tend to move the system toward fulfillment of the requisites of pure or perfect competition, other things

equal. But it is not necessary to adopt pure competition as a norm to support efforts to improve communication in the marketing system. Some other competitive structure might be equally as efficient in operation and reap equal or greater benefit from improved information. To prove or disprove this is not within the scope of this chapter or the analysis of which it is a part. The criteria for evaluation will come from the tenets of communication theory in conjunction with basic marketing principles, not from the requirements of an arbitrarily chosen competitive structure.

With these thoughts in mind, attention will be focused on the operation of the beef marketing system. Behavioral aspects will be emphasized, which means attention to decision processes and how they are formulated. The making of decisions and the subsequent patterns of activity constitute the substance of the system of action here called marketing.

Examination of the System of Action

The beef marketing process is complex, characterized by interactions and activity at several related decision junctions. Drawing on this concept of relation, there seem to be several attributes which are characteristic of each level of activity. The task of presentation might be simplified by examining, in a general sense, the nature of such phenomena which seem to span the forces segregating the activity to stages or levels. Three attributes which appear to fall in this category are (1) the inherent interrelationships which bond the activities into a system, (2) the nature of the decision processes at the various levels of activity, and (3) the prevalence

of price bargaining between and among participants at each of the various levels of activity.

Before developing in more detail each of these three attributes, the relationship among the three should be observed. The interrelationships, presently of unspecified form, are the essential bonding attributes of the system. Unless activities are related in some important way, there is no system. Decisions, on the other hand, will ultimately determine the nature of the interrelations. In general, closeness of relationship indicates similar decision processes. Bargaining on the basis of price is selected as an important means of coordinating system activities. Often, if decisions are of a nature which would tend to promote coordination of activity, price, or relations among prices, will be indicative of the degree of coordination which is achieved.

System Interrelations

Perhaps the first question is one concerning the need for segregated levels of activity which, in turn, are interrelated. The advantages accruing from specialization by function is perhaps the most basic reason. If all activities are controlled by a single firm, little difficulty is experienced in recognizing the nature of interactivity relations.[1] However, when the activities are performed by different firms or entities, such interrelations are more difficult to recognize. The performance of the system tends to vary with the extent

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[1]This is true so long as the operation does not become so large that diseconomies of scale in the managerial sense set in.

to which interrelations are recognized and effectively coordinated.[1] The basic interrelationships which prevail between and among the various activities in the marketing of beef are indicated in Figure IV-1.

Fig. IV-1.--Related activities in the marketing of beef

PRODUCER'S SELLING DECISION

The producer sells the slaughter animal as output of his operation, the live animal moving through

ORGANIZED ASSEMBLY FACILITIES

or bypasses these facilities and goes via

DIRECT SALE

to buying meat packers who purchase the live animal as an input to their operations which includes

MEAT PACKING AND PROCESSING.

The packer sells the animal, processed to varying degrees and with varying services, as output through

WHOLESALING AGENCIES

or bypasses such agencies and sells

DIRECT FROM PACKER

to buying retailers who purchase the beef carcass or beef in other forms as important inputs to their operation of

RETAILING.

Retailers, whether retail stores or participants in the HRI trade, sell a bundle of products and services to consumers who buy and consume beef as part of their overall pattern of

CONSUMPTION.

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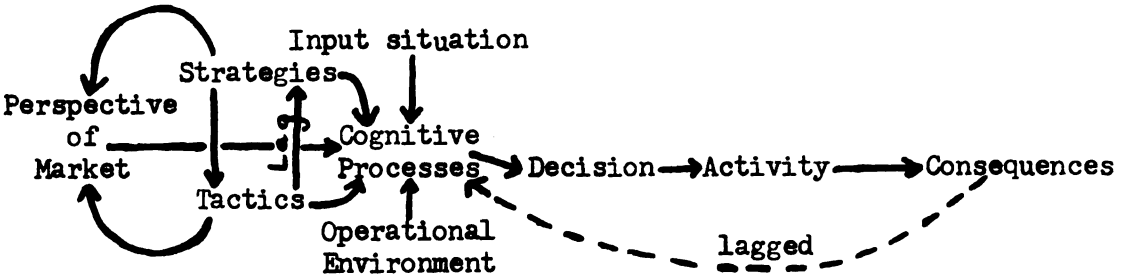
[1] The implication being developed here is that effective communication processes are necessary for coordination of action. Control is, of course, another means of insuring coordination and is a motivating factor in moves to vertical integration. It is maintained here that control is effective as a means of coordinating at least partially because communication may then no longer be a problem.

Examination of Figure IV-1 indicates that the basic interrelations are of an input-output nature. Output for one level of activity becomes an input for the more advanced (in terms of product preparation) levels. Though ineffectively indicated, the basic decisions of the system underlie the selling and buying activities which permit output at one level to become input at another. As would be expected, price and price bargaining processes facilitate movement among the various levels. One dimension not indicated, and along which all activities are related, is that of time. Time will be seen to be of importance in activities throughout the system.

Continuing the general development, Figure IV-2 portrays a general decision format characteristic to varying degrees of decision processes throughout the system. The arrows show direction of influence. Strategies might be defined as long-run guides to action which are future oriented. Tactics are short-run guides to action, designed primarily to deal with emerging situations which do not conform to the strategical criteria. Strategies obviously affect the set of tactics which might be used. On a lagged basis, tactics may cause

Fig. IV-2.--A generalized decision format



readjustment of strategies, especially when the operational environment renders certain tactical measures inoperative or conversely, requires their consistent activation. The remainder of the graph is self explanatory.

Price and pricing processes, whether bargained or otherwise, are important inputs to decision processes. Many of the components of the indicated decision format are price-oriented. Tactics almost always involve prices or attempts to change prices. Price is a determinant of the established perspective of the market, of the input situation, and is often used in measuring the magnitude of any consequences.

Current interest is in the development of a procedure of pricing which does not lose the significance of interaction between buyer and seller, one which is capable of incorporating the implications of unequal bargaining power and/or unequal availability of information. Attention to the bargaining activities between buyer and seller would seem to constitute a relevant approach. Any such procedure will, of course, need to conform to the economic principles of supply and demand. This can be quite easily accomplished and need not be considered as violation of the supply-demand approach to price.

Attention to pricing processes tends to be aggregative in nature, perhaps overly so.[1] By visualizing a distribution of supply curves and a distribution of demand curves, each a reflection of different estimates of supply and demand conditions by buyers and sellers, the perspective which is being suggested can be attained. Aggregation leads to the reduction of the distributions to one supply curve and one demand curve, each in some sense most representative of the underlying distribution. The point of intersection leads to a "market

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[1] Breimyer suggests over-aggregation has resulted in inability to handle effectively pricing processes at a low level of aggregation. Breimyer, "On Price Determination and Aggregate Price Theory," op.cit., p. 682.

clearing price" (an equilibrium price) which, in some length of run, is determinate.

No castigation of supply-demand approaches to pricing is intended. As shown, given the proper perspective, the supply-demand format is capable of delineating different prices which evolve from bargaining procedures based on different estimates of supply and demand. However, unless aggregated to "representative" supply and demand curves, this approach can be cumbersome. A more versatile approach is being sought for conceptual purposes.

Most pricing processes in the beef marketing system are conducted at low levels of aggregation--often a single buyer and single seller. Too, there are less than perfectly competitive conditions to be found, making the task of accurate identification of supply and demand situations more difficult.[1] Consequently, bargaining is on the basis of expectations of supply and demand as incorporated into anticipated actions and behavior patterns of the opposing party. It is the combination of many such bargained results that determine system performance. To reduce these results and the underlying interactions to a single representative referent (such as a single supply and a single demand function) would be to gloss over the behavioral aspects of the system. This seems neither necessary nor desirable.

Figure IV-3 constitutes an attempt to schematize the points being made. The "offer" curves are based on expectations of the seller and buyer respectively. The minimum anticipations of the seller, S'S',

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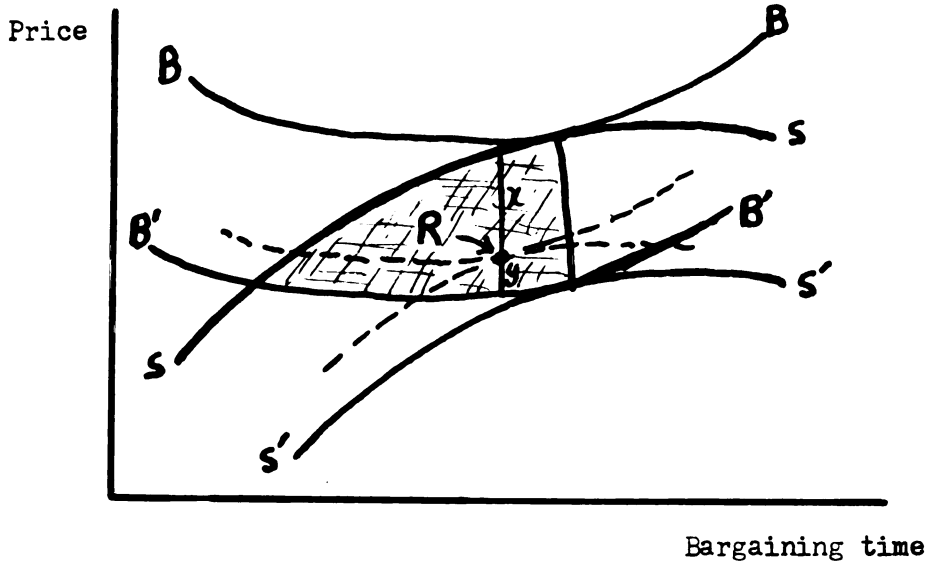
[1] Elliot S. Clifton, "Effect on the Meat Packing Firm of Short-Run Price Variations in Livestock," Journal of Farm Economics, Vol. XXXIX (December, 1957), p. 1646.

might be viewed as a schedule of reservation prices. Conversely, BB might be viewed as a schedule of "ceiling" prices. These two positions

Fig. IV-3.--The bargaining process at a low level of aggregation



Let: BB = seller's maximum offers as anticipated by the buyer
B'B' = seller's minimum offers as anticipated by the buyer
SS = buyer's maximum offers as anticipated by the seller
S'S' = buyer's minimum offers as anticipated by the seller

will be avoided by each party; the seller will aspire to the SS curve and the buyer to the B'B' curve. When the curves are tangential as shown (they need not be), the area of attainable price-time combinations, the cross-hatched area, is at a maximum. Forces of supply and demand place limits on the extent of possible variation in the vertical (price) dimension.[1]

The relative levels of the curves, primarily a reflection of estimates of supply and demand, will determine whether advantages accrue to either party. In an extreme situation, such as would be the

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[1]Such limits are analogous to Taussig's "penumbra." F. W. Taussig, "Is Market Price Determinate?", Quarterly Journal of Economics, Vol. XXXV (May, 1921), p. 396.

case if both BB and B'B' were above SS, the buyer would reap the advantage (assuming the positioning of the curves was a reflection of more realistic estimates on the part of the buyer). In Figure IV-3, a transaction is suggested at point R. This is indicative of advantage accruing to the buyer not because of superior information, but because of superior bargaining power or ability (note $x > y$).

The slope of the curves, not unrelated to the level in the vertical dimension, is largely a function of each party's appraisal of the technique to be employed by the opposing party. With rare exceptions, the process is one of concession by each party. The speed of concession--which affects slope--may depend on previous relations, the perceived sincerity of intentions, etc. Each party will tend to resist more strongly when an unfavorable position is being approached.[1]

One final comment concerning the formulation--it is conceptually valid only where it can be assumed that the product under consideration is viewed identically by both buyer and seller. If the two parties are bargaining with different products in mind, which would be the case if product characteristics are valued differently (in monetary terms), the price scale along the vertical axis is no longer relevant. A third dimension, namely product specification, is added and the format is incapable of handling a third dimension.

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[1]Stevens refers to the "avoidance gradient," an indicator of the tendency to avoid some position. He suggests the strength of this tendency is a decreasing function of the distance from the undesirable position. Realistic anticipations would thus incorporate a "flattening" of the curves as concessions are granted and bargaining continues. Carl M. Stevens, "On the Theory of Negotiation," Quarterly Journal of Economics, Vol. LXXII (February, 1958), pp. 77-97.

Basic Activities and Attributes of the Beef Marketing System

Within the more general framework which has been established, a more detailed look at the various activities is required. Beginning at the level of consumption, each of the important seats of activity (as identified in Figure IV-1) will be examined. At this point, it bears mentioning again that marketing is a process, and that "stopping" the process and examining its parts is an abstraction from reality and an expression of inability to deal effectively with the process as such.

The attributes to be discussed at each level include (1) the nature of decision processes, including underlying strategical and tactical measures, (2) the impact of the structural environment on decision processes and decision criteria, (3) the impact of time on the activities of the participants, (4) the nature of the product, especially as it becomes a factor in conditions of exchange, (5) change and pressures for change as they affect the performance of system participants, and (6) special attention to price because of its importance as conveyor of information and coordinator of action, and because price is widely used as a means of appraising the performance of system participants.

Consumption

There is little conclusive evidence as to how the consumer chooses among cuts of beef. Of prime concern here is the extent to which those choices might be made on the basis of criteria important to the rest of the system, particularly federal grades.

Both visual and eating preference studies provide mixed evidence as to whether grades correspond with criteria consumers use in choosing. Williams and Stout review results from both types of analyses.[1] In general, indicated preferences were widely distributed among grades. The visual preference studies, conducted in the 1955-59 period, indicated that from 14 to 31 percent of consumers preferred the Commercial grade.[2] Analyses on the basis of eating preferences, conducted largely in the same period, revealed a marked overlap on a preference scale for all grades tested, especially Choice and Good.[3] Pierce, in reporting on a more recent study performed by the American Meat Institute for the USDA, states that "In general, the higher grade was significantly more tender, juicier, and more flavorful than lower grades."[4] The extent to which these attributes can be meaningfully applied by the buying consumer is questionable, however.

Seemingly in direct contradiction to such results is the consumer's widespread acceptance of the Choice grade as being of desirable quality. As noted earlier, 57 percent of the beef sold in 1964 was

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[1]Williams and Stout, op.cit., pp. 519-27.

[2]Consumers were asked to choose among cuts which graded Prime, Choice, Good, and Commercial with no designation of grades and equal prices.

[3]In this study, consumers were asked to rate their preferences for beef of Prime, Choice, Good, and Standard quality. The variability in ratings increased as the "quality" was lower, especially for the Standard grade (price held constant).

[4]John C. Pierce, "How Well Do USDA Grades Measure Beef Quality?", Agricultural Marketing, Vol. VI (August, 1961), p. 4.

federally graded. Of the amount graded, 77 percent was Choice.[1] Quite often, a retailer brand was the only identifying label when the beef was placed before the consumer.

Overall, the consumer appears to employ federal grades, especially Choice, and packer or retailer labels as indicators of quality and bases for choice. An element of buying behavior of increasing importance is the consumer's willingness to pay for services in conjunction with the basic product. Hathaway suggests "the income elasticity for marketing services is higher than for the farm products component of food at retail . . ."[2] For fresh beef, services provided have included deboning, trimming, slicing, and various methods of tenderizing and aging. This, plus an increasing preference for leaner and less wasty cuts of beef, are two general tendencies which combine with choices on quality to comprise the substance of the consumer's decision processes. The decision is one of acceptance or rejection of the particular product-price combinations offered for consideration.

Retailing

Consumer demand becomes the output situation--the market--faced by the retailer.[3] Effective interpretation of consumer demand is

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[1] Organization and Competition in the Livestock and Meat Industry, op.cit., p. 37, Table 4-1.

[2] Dale Hathaway, "Agriculture in an Unstable Economy Revisited," Journal of Farm Economics, Vol. XLI (May, 1959), p. 488. This is for food in the aggregate, not just beef.

[3] "Retailing" is viewed as including retail chains, affiliated grocers, and the HRI trade. Given the relative importance of the retail chain, the discussion will revolve around it. The decisions and procedures, in the sense they are here being appraised, differs little for the affiliated grocers. The HRI trade is of less importance and more nearly unique.

essential and basic to the retailer's decisions and activities as a handler and seller of beef.

The retailer's task is complicated by the heterogeneous nature of beef. Beef is characterized by continuous scales of variation along such value related dimensions as age, color and firmness of lean, proportion of lean to fat, etc. The consumer tests indicated such attributes are considered in expressing preferences and the retailer faces many differentiated demands for beef. The nature of demand varies by areas and by income level of the buying consumer.

The consumer makes no conscious attempt to inform the retailer of the type of beef she prefers. Bargaining is restricted to acceptance or rejection of the retailer's combined offering of product and services at specified prices. Consequently, the retailer evaluates the "vote" of the consumer in seeking to recognize trends in preferences and in efforts to relate purchases and operations to consumer demands.

Per capita consumption data indicate the importance consumers attach to beef. The retailer seeks to protect his competitive position and his image among consumers by conforming to consumer demands and desires. Only limited success has been achieved in differentiating fresh beef via promotional campaigns.[1] Overall, conformance with consumer dictates might thus be suggested as a basic strategical consideration. Tactical measures such as price specials are frequently employed in efforts to increase traffic within the store and/or offset similar "specials" offered by competing retailers.

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[1] Organization and Competition in the Livestock and Meat Industry, op.cit., p. 34.

Procurement practices vary by size of operation. Small retailers may obtain fresh beef through wholesalers or cooperatively owned buying organizations, with the buying agency handling necessary arrangements including development of specifications and inspection for conformity. Packers usually provide the delivery services. The larger retailer often has a special division to handle buying operations. The number of suppliers tends to be greater for the large retailer (as many as 50) and fewer as the size of the retailer declines.

There are two dimensions of procurement operations of basic importance to the retailer. The first is the timing of operations. Sales at retail usually are from five to ten days after shipment by the supplier. Consequently, the retailer buys on the basis of expectations concerning the volume of a specified product which will be taken at established prices. Prices tend to be "sticky" at retail. The retailer does not favor frequent price changes unless in the form of price specials. Often a change of three to five cents a pound in wholesale prices is necessary for retailers to consider it worthwhile to change their regular meat prices.[1] Anthony and Motes observed a lag of about one month in response of retail prices to changes in live cattle prices.[2]

Another factor of importance to retailers' procurement activities is that of product specification. Having established the nature of the differentiated demands which they face, and this on the basis

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[1] Organization and Competition in the Livestock and Meat Industry, op.cit., p. 55.

[2] Anthony and Motes, op.cit., p. 274.

of vague and ill-defined criteria of choice by consumers, retailers must buy carcass beef, their "raw material," accordingly.

Techniques employed in product specification vary among retailers, but often begin with federal grades as a point of departure. More detailed requirements within grade include increased specification of such characteristics as indications of maturity, carcass weight, back-fat thickness, and on occasion, the degree of marbling and size of the ribeye. When federal grades are not employed, as is often the case when a national packer is the supplier, specifications are based on a set of packer classifications.

Actual processes of transaction or exchange of title also vary. Various methods of formula pricing are employed by retailers and their suppliers.[1] Under such procedure, the conditions of exchange are bargained initially when the "formula" is set up. The arrangement may then prevail for months or even years, being subjected to periodic review and renegotiation between buyer and seller.[2] Large retail buyers often support this method because it is convenient and saves time and resources. Smaller sellers and buyers rely on the "Yellow Sheet" because it is a simple and relatively inexpensive source of information about other buyers' and sellers' price bases.

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[1] In 1964-65, 41 percent of transactions in beef and veal between packers responding to a survey and their most important customers were based on formula pricing. In nearly all cases, the "Yellow Sheet" was the quotation source. Organization and Competition in the Livestock and Meat Industry, op.cit., p. 57.

[2] An example for such a common formula is for beef shipped from Omaha to New York, using the "Yellow Sheet" price (f.o.b. Chicago) for the day prior to shipment less 50 cents per cwt. (transportation cost between Omaha and Chicago on shipments to the East), plus $2 per cwt. (to cover transportation cost between Omaha and New York), Ibid., pp. 57-58.

When formula pricing is not employed, each transaction must be bargained. The retailer is interested primarily in certain volumes of a specified product (or products). Price information is obtained from the "Yellow Sheet", the USDA wholesale market reports, trade contacts, or some combination of the three. Many large packers issue "price sheets" periodically, especially to their regular customers. Estimates of supply are based on industry contacts and overall understanding of wholesale beef market behavior in relation to supply. Increasingly, attention is paid USDA estimates of weekly federally inspected slaughter. Upon the basis of such information, suppliers are contacted and transactions are bargained. Where buyer-seller relationships are firmly established, the bargaining may consist of little more than contact with the supplier and indication of what is needed.

The changing relative position of the retail segment is not neutral as a factor in determining retailer activity. A more favorable bargaining position, gained largely over the past two decades, has become important. It is the retailer who began insisting on more detailed specification of the beef carcass or primal cuts. Packers have been literally forced to comply, and any concessions made during negotiations largely flow from the packer to the retailer.[1] Many retail chain buyers are former packer employees. Their knowledge of the cost structure of packer operations, taken in conjunction with increased bargaining power in the hands of the retailer, has provided the basis for much of the cost-price squeeze on packers. DeGraff

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[1] Such concessions may include quantity discounts to large buyers, advertising allowances, and price reductions. Organization and Competition in the Livestock and Meat Industry, op.cit., p. 49.

makes this point quite clearly in the following description of retail buyer activities and procedure:[1]

> He (the retail buyer) does not care what the packer's costs are . . . he just knows costs well enough to know that some packers have lower costs, and about what they are. He figures that he should buy with something like the lower-bracket costs included in the price he pays. In this sense he can push his buying price low enough to cover efficient packers, including a profit, but not covering the less-efficient packers. In other words, he can push a less-efficient packer out of business, or cause him to become more efficient, or cause him to find other customers.

It might be suggested that the retailer has a considerable degree of control over the input situation he faces, with available supply constituting the basic force he cannot effectively control. This degree of control and the competitive environment from which it emerges will, of course, become an important consideration for suppliers (packers, wholesalers) as they establish a perspective of their output situation.

A paranthetical statement is in order at this point. In Chapter I, a "restricted" system of action was presented to outline the activities which were to receive attention. Retailing activities were excluded from this system, largely due to the assumption that the retailer is relatively effective in interpreting consumer desires and transmitting them to their suppliers. In the general treatment in this chapter, this restriction was considered both undesirable and unnecessary. Brief examination of the retail spectrum of activity was considered essential to develop understanding of activity in the wholesale beef market. The restriction will be picked up again in

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[1] DeGraff, op.cit., p. 209.

Chapter V which will attempt a more detailed appraisal of selected facets of system activity.

Meat Packing, Processing, and Wholesaling Activities

The meat packing firm becomes the important second party to activity in the wholesale beef market. Much of the beef moves directly from packer to retail. The remainder moves through facilities and via services provided by packer branch houses, independent wholesalers, and merchandising agents or brokers.

In a basic sense, the role of the independent wholesaler and the broker is that of providing services or performing functions which neither packers nor retailers have adopted as part of their operation. The packer branch house is primarily a geographical extension of packer activity and is largely insignificant as a director of system activity at this level. It is the meat packer, in conjunction with the retailer, that makes the decision and becomes the dominant force in determining the situation which prevails in the wholesale beef market. Consequently, the wholesaler, broker, etc., will be considered only where their activity seems to lend direction to the activity which is taking place.

The two important types of independent wholesalers are jobbers and breakers. Important differences between the two include (1) breakers handle large volumes and buy from more distant areas, (2) the jobber deals mainly in the purchase and sale of wholesale cuts (loins, chucks, etc.), while the breaker buys carcasses and sells wholesale cuts, and (3) breakers are important suppliers of jobbers.

Jobber activity tends to be of a specialized nature, involving special services such as frequent and small deliveries. The HRI trade is the main outlet for the jobber. Much of the beef handled by jobbers is federally graded, a result of (1) customer demand for federal grades as evidence of quality, and (2) the usefulness of grades as standards of measurement. Transactions with suppliers are bargained; formula pricing is seldom used. Local suppliers constitute the basic source of information, with reference being made to the "Yellow Sheet" or the USDA wholesale market report for purposes of verification and detection of trends. The jobber faces little competition from breakers and independent packers, primarily because of the specialized nature of activity. More competition comes from the national packers with their diversified operations and opportunity to sell federally graded products. Price specials at the retail level, which threaten to attract their customers, are of increasing concern to the jobber.

Breakers, less localized in their operations, are more nearly participants in the national wholesale market for beef. Emphasis on federally graded meat is only slightly less than in the case of the jobber.[1] A large-volume outlet for carcass beef is the most important service provided by breakers. The breaker is used by packers and/or retailers when direct channels are not available and when neither the packer nor retailer is prepared to perform the breaking function.

Breakers buy mostly from packers, with brokers constituting the only other source of supply of any importance. Federal grades as refined by more detailed specification and packer classifications are

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[1]In 1955, 75 percent of breaker volume and 85 percent of jobber volume was federally graded. Williams, Bowen, and Genovese, op.cit., p. 72.

the basic means of product specification. Inspection and/or pledges of future business secure conformance. Unlike the jobber, the breaker relies on such "national" reports as the "Yellow Sheet" and the USDA wholesale report. Existence of transactions on a formula pricing basis is negligible.

One important contribution almost unique to breakers is the breaking of carcasses and the directing of various wholesale cuts into the most appropriate outlets. Their ability to perform this function means they are an important outlet for packers with carcasses which, on a carcass basis, do not meet the retailer's specifications. However, many of the cuts from such carcasses are not unattractive to the retailer. Consequently, the breaker may sell wholesale cuts such as ribs and loins to the HRI trade and the remaining cuts (such as rounds where overall carcass attributes have little effect on the desirability of the cut) to retailers.

In general, breakers have attempted to avoid competition with each other and to establish an array of services or activities which, because of locational or other advantages, gives them a sheltered market. Their future status is questionable, especially if packers and/or retailers begin to provide similar services.[1]

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[1] There are recent indications that retailers are providing more of the breaking services as they adopt centralized warehousing and distribution procedures. On the other side of the breaker, a trend may also be developing. At least one large specialized beef slaughterer in the Iowa-Nebraska area has recently constructed a plant which is adaptable to the provision of services to the extent of retail packaging and preparation.

Brokers or merchandising agents handled only 16 percent of 1964 sales of carcass and primal beef, but this volume may not be indicative of their importance to system activities.[1] Because of their strategic position and often nationwide contacts, brokers are an important source of information on activities in the wholesale market for beef. Packers tend to use brokers' ability to find outlets for carcass beef which cannot be effectively merchandised through regular channels. The breaker often provides the broker an outlet for such carcasses. Packers usually can count on regular customers for up to 90 percent of their volume. They must face the "open" market with the remainder of their output and, depending on conditions in the market, the broker may be employed as an outlet.

In turning more directly to consideration of packers, it is worth noting the strategic position the packer occupies and the importance of activities at the packer level to overall system performance.[2] The

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[1] Organization and Competition in the Livestock and Meat Industry, op.cit., p. 54, Table 5-11.

[2] The basis for examination of packer activities is provided primarily by interviews with various packers. Packers are caught up in the currents of change which are sweeping the industry and secondary sources of information are not sufficient in their description of packer activities and practices. However, the following references provide a reasonably complete background which facilitates understanding along these lines: Williams and Stout, op.cit., Chapters 14, 23, and pp. 681-703; DeGraff, op.cit., Chapter 7; Organization and Competition in the Livestock and Meat Industry, op.cit., Chapters 4 and 5; Breimyer, Demand and Prices for Meat, op.cit., pp. 9-16; Williams and Uvacek, op.cit., especially pp. 23-40.

packer is one of the principals in each of the two important "markets" in the marketing of beef--the wholesale or dressed meat market for beef, and the market for the live beef animal. Given this strategic position, packer activities are important in determining the extent to which activities in the two markets are related, and relation in this sense requires effective communication.

The packer must first come to grips with his output situation. An immediate confrontation with the increasingly powerful retailer is the result. Because the retailer faces demands for many types of beef, so too does the packer. The retailer provides, in rather specific terms, indications of the nature and characteristics of the products which are needed. Federal grades, when used, are seldom deemed sufficient by retailers as means of product specification. Increased detail is required. The result is a conglomerate of non-standardized classifications among packers. It is not unusual to find a packer employing different systems of specification for different customers.[1]

In general, packers tend to view their market as being effectively determined by the retailer and consider their operation as one of selling on a specification basis at established market prices. Actually, packer efforts to merchandise their product have been more successful than such a perception would imply. National packers achieve some success in merchandising via their brand names. Almost all packers seek to take advantage of the benefits which may accrue from having certain types of carcasses federally graded. All carcasses are often block stamped by the grader. Liners may be held in the

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[1] These situation-oriented relations have apparently been a reason for packer opposition to dual grading. Dual grading would not "fit" such established relations.

cooler, thoroughly chilled, and sold in the higher grade if regrading moves them to the higher grade.[1]

Other indications suggest packers do not really subscribe to a passive role in the selling of their product. Continuous efforts are made to stay abreast of wholesale market conditions. The "Yellow Sheet", the USDA wholesale report, and often most important, an informal network of contacts throughout the industry provide information on prices. Trade contacts and such published data as the USDA's estimates of federally inspected slaughter are combined with available information on packer cooler or inventory conditions to stay informed on the state of supply. Increased attention is given examination and study of retailer activity such as buying patterns, timing of price specials, etc., as indicators of demand and potential changes in demand.

Even the most concerted effort to effectively appraise the output situation is burdened by the time element. Up to three weeks are required for the live animal to be purchased, slaughtered, and the output sold. Consequently, the packer must attempt to coordinate buying activities for livestock and sale of output on the basis of expectations. He is often frustrated in attempts to bring some order to the relation between these two basic activities by two areas of uncertainty--price in the wholesale market and the supply of live animals. From these two sources of uncertainty comes an element of instability which is not only frustrating to the packer, but as will

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[1] "Block stamped" refers to the practice of tentatively grading carcasses and marking the grade at several points on the carcass. These may be removed if a decision is made by the packer to sell the carcass ungraded. If sold graded, the grade stamp is "rolled on" in a more permanent and encompassing fashion. A "liner" is a carcass which tends to fall on the arbitrary dividing line between two grades. Packers are typically interested in chilling the carcass and hoping it will move in grade if previously "below" the dividing line.

be seen, is felt throughout the system.

Having formulated expectations of the situation which is likely to prevail in the dressed meat market, the packer attempts to coordinate buying activities with those expectations. Strategic criteria underly those attempts at coordination of the input and output situations as perceived by decision-making packer personnel.

The basic strategy of operation begins with a desired rate of return on investment.[1] This is converted, for each plant operation, to the gross margin per head which would be required to realize the return on investment. Expectations of what can be realized in the wholesale or carcass market are combined with the value of by-products, the costs of handling, slaughtering, chilling, etc., to arrive at an estimate of the value per hundredweight of dressed beef. By employing an expected yield of dressed beef from liveweight as a conversion factor, the price for live cattle, which would be a break-even price, is calculated.[2] This procedure is repeated for each grade or other classification of beef to be sold. The calculated prices are then employed in developing guidelines, usually in the form of price ceilings, to be followed in the procurement of live cattle. Buyers are given the guidelines daily.

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[1]Development of this "strategy" of operation is based largely on interviews with representatives of two large national packers. In general, it is believed that this or similar procedures are used by most packers except possibly the very small ones who may not be capable of this level of sophistication or who are price takers to the extent that establishment of such strategical measures would be largely meaningless. The development is not unlike that presented by DeGraff, op.cit., p. 204-05.

[2]The importance of yield in the pricing of the live animal is obvious at this point.

The task is one of continual appraisal and recalculation. The perishable nature of beef, once the animal is slaughtered, makes the alignment of purchases with needs even more crucial. Storage of fresh beef is seldom attempted beyond two to three weeks. Thus, inventory management is of limited assistance in helping to assure the specified needs of customers can be met. The burden is on the procurement activities in the live animal market, and as will be recalled, the task is made more difficult by the lag of one to three weeks between time of purchase and time of shipment to the buying retailer or other outlet.

Such a situation has motivated several developments at the packer level. Packer feeding of livestock, an attempt to control "inventory," is one. Attempts at forward pricing via contractual arrangements is another. Support for procurement procedures which value the animal according to carcass attributes is increasing. But because of limited success via these measures, and because the formidable competition offered by the retailer largely circumvents any attempt to effect control or adjustment in the wholesale beef market, packers are prone to adopt measures to "force" conformance with needs in the live cattle market.

Underlying such attempts are efforts to predict the supply of live animals. The number of cattle on feed, USDA reports on 12-market receipts and estimates of supply and/or slaughter are employed as a basis for such predictions. The basic reasoning underlying such attempts is relatively simple. If supply can be predicted with a reasonable degree of accuracy, buying patterns may be adjusted so that

purchases are large when supply is heavy, small when light. Such attempts at adjustment must be made within the limits of operating requirements. Fixed commitments among customers and fixed labor costs dictate that these requirements be met except in the most extreme circumstances.[1]

Possible adjustments usually take the form of buying heavily during a week of heavy supplies and carrying over a portion of the requirements for the following weeks when conditions are expected to be less favorable. Carryovers of up to 35 percent are not uncommon. When buying is direct, the possibilities are even greater. Agreements may be made with producers for future delivery at prices negotiated in the present buying period. Supply may thus be programmed so as to offset the necessity for "bidding up" prices when supply is light. If most purchases are on a terminal market, the possibilities of this type of adjustment are less. When buying is both direct and on the terminal, emphasis may be switched as the need arises. In particular, the packer may be seen to take advantage of the opportunity presented by an abnormally heavy supply on the terminal.

Packers also indicate efforts to coordinate such adjustments with changing conditions in the wholesale market. For example, if the supply of live animals is heavy during a particular week and the dressed beef market is favorable, attempts will be made to convince

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[1]When supplies can be predicted, some adjustment is available via changes in the labor force. Labor contracts usually state that unless notification is made on Friday, all employees who report on Monday must be paid a full work week. If a light supply is expected and a poor relation between live prices and dressed meat prices anticipated as a result, reductions in the labor force (by such as eliminating a shift) may ease the pressure if the workers are notified before the deadline.

retailers or other outlets to commit themselves for future delivery of beef on the basis of current dressed beef prices. The reasoning is that the dressed beef market is likely to be less favorable in the near future as the heavy supply is moved through the system.

Invariably, because of inability to accurately predict the supply of live animals, operating requirements will force violation of the buying guidelines. An unexpectedly light supply of live animals will occur and the packer has no alternative but to enter the market and bid up price. Conversely, the packer may try to force price lower during a period of heavy supply. The uncertainty faced by the packer sets in motion forces which tend to accentuate short run price fluctuations in the live cattle market. The intensity of such forces is increased even more by the ever-present realization that formulated expectations for the wholesale beef market may prove incorrect.

Establishing a workable input-output relation along the time dimension is thus a continuing problem for the packer. A related problem is that of product specification. Considerable attention has been given the manner in which the product is specified in moving from the packer to the retailer. The carcass may be visually examined and in many instances, the qualifications imposed by the retailer are potentially measurable. Packers are then charged with the task of buying live animals which will provide carcasses consistent with retailer requirements. Given the manner in which most live animals are purchased, their ability to do so is limited.

Theoretically, federal grades for livestock permit the relating of live animal to carcass characteristics. Research findings indicate buyers make significant errors in grading the live animal.[1] The studies also indicate errors in estimating yield. The two errors are so related as to make the total error larger than the sum of the two (in terms of value). The situation is made even more impossible when it is recalled that the packer must sell under more rigid specification requirements than those provided by the federal grades. Nor is the problem in estimating grade and other characteristics unrelated to other aspects of buying operations. When the prevailing conditions are such that the price guidelines are being threatened, packers report a tendency for the buyer to "cheat" on other attributes such as estimates of grade and yield while trying to adhere to the restrictions on price.

In light of these difficulties, packer buyers may rely on other indicators when buying on a liveweight and grade basis. Producers may be queried concerning the age of the animals, how long they have been on grain, etc. Such factors as these are known to relate to the

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[1] In general, buyers were found to be wrong by at least one-third of a grade about one-third of the time. Errors of this magnitude imply deviations of $10 or more in the actual value of each animal. See E. H. Jebe and E. S. Clifton, "Estimating Yields and Grades of Slaughter Steers and Heifers," Journal of Farm Economics, Vol. XXXVIII (May, 1956), pp. 584-96; North Central Regional Livestock Marketing Research Committee, Pricing Accuracy of Slaughter Cattle, Veal Calves, and Lambs, North Central Regional Publication 53, Indiana Agricultural Experiment Station Bulletin 611 (Bloomington: University of Indiana, October, 1954). McPherson and Dixon report errors of similar magnitude by trained graders. W. K. McPherson and L. V. Dixon, "A Quantitative Evaluation of the Ability of Individuals to Grade Live Cattle," Journal of Farm Economics, Vol. XLVIII (February, 1966), pp. 71-74.

desirability of the carcass which will be produced. Out of this situation has arisen reliance on the "reputation of the feeder" as an indicator of what to expect from the live animal.[1] The net result is a pattern of activity which offers little guarantee the producer will be rewarded for production of animals with high retail value. Conversely, penalties are imposed for production of lower value animals only in the extreme case such as the fat and obviously wasty animal.

From this situation has arisen increased attention to buying procedures which determine value on the basis of carcass grade and weight. A growing percentage of slaughter livestock are being sold via such procedures. The most common at present entails the bargaining of price before slaughter. Acceptance of this procedure is being restrained by inequities which have developed, largely due to lack of producer understanding of procedure and the absence of any means of supervising packer activities to insure conformance with negotiated and/or expected procedures. These and related problems will be given more attention when producer and marketing agency activities are examined.

Operations and underlying decision processes at the packer level are complex. The presentation of this phase of marketing activity has surely been overly simple and naive in many important respects. Perhaps the appraisal has been sufficient to indicate the problems which packers face in trying to effect coordination between their output and input situations. In turning attention to activities at the producer and marketing agency level, additional insight should be provided concerning the complexities of the live cattle market.

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[1] It might be suggested in passing that this is not very far removed from the use of "place of origin" as an indicator of quality in the nineteenth century.

The Market for Live Cattle--Producer and Marketing Agency Activity

The marketing agency, theoretically part of the framework within which producers' selling activities are conducted, has become a direct determinant of the nature of producer decisions and activity. To fully appreciate their importance requires examination of the relation between the producer's selling decision and the environment within which that decision is made. In simple terms, this means the structural organization of the system is not independent of participant activity.[1] This is not unexpected, but the extent to which this lack of independence affects the nature of activity at this level might well be. Williams and Stout's comment which follows suggests the extent of relation between system structure and producer activity:[2]

> The producer is told that true market values are more nearly established at terminal markets than elsewhere, but these frequently are not particularly convenient and marketing charges at these markets often appear excessively high. Auctions, he finds, are more conveniently located, but he notices that there are relatively few active buyers at some of these markets for particular classes of livestock. He is told that direct selling to packers and others somehow is "bad" for him but he frequently realizes higher net returns in selling direct. He is given to understand that more competition is better than less competition but he is told that with large numbers of competing markets, volumes at each is affected and marketing costs rise. Uniform

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[1] Breimyer makes this point, suggesting that the prevailing system is not neutral with respect to price-making, that its (the system's) makeup can have much to do with the level of prices. Breimyer, Demand and Prices for Meat, op.cit., p. 9. Given the perspective here adopted, it is perhaps more relevant to suggest system structure affects price because it affects the nature of system activity. Breimyer's use of "price-making" suggests his perspective was similar.

[2] Williams and Stout, op.cit., pp. 181-82.

> grades and standards appear consistent with the aims of reducing marketing costs and increasing pricing efficiency, but they are opposed by many impressively large meat packing firms obstensibly in the interests of producers. Grade and weight selling of livestock eliminates much of the guesswork associated with value differences in grade, weight shrinkage, and yield. But the producer finds that this method of selling is opposed almost solidly by established marketing interests. An so it goes.

The most active and outspoken agencies have been those representing the terminal markets, usually commission agencies, and auction market representatives. In general, their efforts and words are in opposition to the increasing trend toward direct (to the packer) sale of livestock. Their "attack" is based on two broad theses, (1) the promotion of terminal and auction selling as the only truly competitive methods of selling, and (2) denouncement of the conditions of sale when livestock are sold direct.

A truly competitive method of selling is viewed as one which involves many buyers and sellers in physical proximity to each other and to the product being sold. An indication of the impact of this long-voiced position is provided by the following passages from a 1959 research publication:[1]

> . . . to many farmers competition is an uncertain thing unless it is evidenced by the physical meeting and bidding for the lot of his livestock by several buyers at essentially the same time as in the case of terminals and auctions. Competition between outlets which manifests itself in higher prices or more services, apparently is seen by farmers simply as higher offered prices or more services rather than as intermarket competition.

The results of such pressures on the producer take many forms. But

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[1] R. R. Newberg, Livestock Marketing in the North Central Region. I. Where Farmers and Ranchers Buy and Sell, North Central Regional Publication 104, Ohio Agricultural Experiment Station Bulletin 846 (Columbus: Ohio State University, December, 1959), p. 110.

the impact of the operational environment should not be underestimated.[1]

Concern over the conditions of sale when cattle are sold direct is in many instances well grounded. Marketing agencies argue that straight price comparisons between direct and terminal or auction alternatives are often biased by the conditions under which the cattle are sold direct. In particular, the variation in weighing conditions and the lack of standardization of packer grading practices are voiced as possible reasons why price comparisons might be incorrect. The point being that even when the recognized costs of marketing are considered, an apparent price differential in favor of direct sales might disappear if the producer were aware of the implications of the time and conditions of weighing, the "costs" of the pencil shrink, etc. The validity of these points is given support by the USDA's attention to weighing conditions in their reports covering direct or range sales.

In examining producers' selling decisions and activities, it will become clear that the marketing agencies have more direct roles to perform. However, their possible impact on the organizational structure of this part of the system and their resistance to the changes which are occurring should be borne in mind.

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[1]The often paradoxical situation faced by the producer was clearly revealed during an interview with an influential Iowa feeder. During the previous week, he had sold 6 loads of steers direct to a nearby packer. This was the first time in 12 years he had sold via any means other than the Chicago terminal market. He estimated his net return at $3,000 above what he would have received at Chicago. The day of the interview, he had received a request to serve as part of a 25-man board dedicated to "rebuilding" the Chicago terminal market.

Strategical considerations are not always clearly defined by producers.[1] Perhaps most attention is given efforts to maintain an acceptable level of income over time. As the feeding unit becomes larger and requires more capital, attention is paid the need for consistent volumes and faster turnover. Fixed costs are demanding more attention. It might be suggested that the most basic of all strategies is the alignment of production with the needs of consumers. However, the many ways in which consumption and production are separated create a conceptual breach too broad for most producers to cross. Few are heard to mention the need for coordination between production and consumption. Other things are seen as more important to their income positions. It appears the system is charged with creating the environment which will promote coordination between what is produced and what is demanded.

Tactical measures are clearly in use. Where the decision was once largely when to sell, considerations of where and how to sell are becoming more important.[2]

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[1] As was the case with packers, interviews with producers provide a basis for evaluation of their activities. Valuable secondary sources include Williams and Stout, op.cit., Chapters 8-12 and Chapter 27; Anthony and Motes, op.cit.; DeGraff, op.cit.; Hopkin and Kramer, op.cit.; and an excellent reference for historical review purposes, Dowell and Bjorka, op.cit.

[2] Newberg indicates that during 1956, many producers did not actually evaluate alternatives. Few producers based their decisions on such factors as competitive bids, appraisals, etc. A high proportion, 80 percent, patronized a single outlet exclusively. Only 4 percent considered three or more outlets. Apparently, habit and convenience were important factors. Newberg, op.cit., p. 201. Interaction with producers in Michigan and Iowa indicate a marked change in attitude in the past 10 years. The percentage of producers who are content to sell on the basis of custom or habit and ignore alternatives is dwindling.

Before considering decision processes and subsequent activities more directly, attention is due the relation between tactical success and the fulfillment of strategical goals. Unlike many other system participants, the producer as seller is not active daily. Many producers sell only a few times a year. How they fare when they do sell is an important determinant of the extent to which income or net return goals are realized. Thus, importance attaches squarely to each selling decision. If the consequences are bad, the producer is denied the opportunity to recoup the following day or to rely on a large number of transactions to "average out" the errors or variability. From this realization comes an indication of the challenge faced by the system as a whole, if the suggestion that the system must effect productive alignment is correct. The producer has only a few personal observations from which to detect trends in consumer demands. If these observations are periodically up and down (in terms of price) a considerable time may be required before the producer decides change is in order. He is not likely to adjust on the basis of his neighbor's experience or published indications of change when his selling experiences are to the contrary or present no recognizable trend or pattern. This is another instance of the time problem which crops up throughout the system and, it should be divorced from the inevitable lag in adjustment due to the biological nature of production.

Actual decision processes and bases for decisions will be examined under two sets of circumstances. First, the decisions of the producers who continue to patronize one outlet will be examined. Then, and because the difference in procedure is substantial, the decision format of those producers who evaluate alternatives will be examined.

The terminal market, and to a lesser extent the auction, are the more important "single outlets". Selling procedure differs, but the overall method is sufficiently similar to justify considering only one of the two in detail.

The producer who sells exclusively to the terminal market passes much of the decision responsibility to the commission firm.[1] The commission agent is employed as collector and interpreter of information and the decision concerning when to market is often his. Such relations are especially prevalent where the production unit is relatively small or the producer has other interests. These activities are left to the commission agent because "they are part of what he is being paid for". The extent to which the producer actually becomes a factor in the decision is one of degree. If really a part, he will be seen to gather and interpret much of the same type of information as employed by the commission agent.

The commission agent, active daily on the market, is in a strategic position to evaluate market conditions. He is aware of prevailing trends in price. Frequent checks with the USDA reporter guard against perceptual differences between the overall trend and the trend observed by the commission firm as a selling agency. Reports on 12-market receipts, federally inspected slaughter, and personal visits to area feedlots provide a basis for supply estimates. Price levels in the wholesale meat market as reported by the "Yellow Sheet", the USDA wholesale market report, and personal contacts in the packing industry are increasingly noted as indicators of demand. The commission

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[1] Many of the producers who sell regularly through some marketing agency indicate they do not feel qualified to negotiate direct sales with packers.

salesman, observing an upward trend in livestock prices, may be heard to comment that "the wholesale market must be higher."

With this background of information, the commission firm seeks to advise customers as to when they should sell their cattle. To a lesser extent, advice is given on the types of production (especially degree of finish) which appear to be in strongest demand.

In preparing for daily bargaining with buyers, the firm uses much the same but current information. The larger firms contact sister agencies on surrounding markets where trading has already begun due to earlier starting times or different time zones.[1] Consideration is given the purchases of the various buyers on the previous session; if one buyer bought very little, the feeling is he will be an aggressive bidder. With developed estimates of supply and demand and in full awareness of the pace of trading activity on the previous session, the commission salesman is equipped with a set of anticipations with regard to packer offers. On the larger markets, the salesmen keep in contact throughout the session, often by two-way radio. The developed anticipations may be revised when trading is begun and deviations from expected conditions are noted.[2]

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[1] For example, Producers Commission Co. on the Sioux City Market will make early morning contacts to sister agencies in Omaha and Chicago.

[2] As an illustration, suppose a heavy supply of cattle is on hand. Anticipations may be for lower bids by buyers. When trading is begun, heavy order buyer activity is noted. The anticipated lower bids by buyers may never develop. (An "order buyer" is a buyer commissioned by some packer who might not otherwise be represented on the market to buy for the packer. Order buyer activity might, in the illustration, bolster demand to such an extent that the heavy supply is effectively sold.)

When producers consider alternative methods of selling, the responsibility of decision rests largely on their shoulders. The outlet--terminal, auction, or direct--must be chosen. If the terminal or auction is chosen, the producer knows that the sale will be made on a liveweight and grade basis. At the terminal, the cattle will be weighed immediately after sale. The time of weighing at the auctions varies but would generally be known. If the sale is direct, it may be liveweight and grade, carcass weight and grade, or some variation of either. Weighing conditions are subject to negotiation.

Before choosing the direct alternative, however, the producer will form expectations of price if the cattle were to be sold on the terminal or auction market. Daily USDA reports of live cattle trading activity as conveyed by the mass media are noted. A commission man may be contacted. Trends are noted on supply, pace of trading activity, and perhaps average weight by class and grades--all available through daily USDA reports and the weekly or semi-weekly written reports from important terminal markets. Newsletters from commission agencies, based largely on USDA reports, may be available. The producer may be well informed on the probable carcass characteristics of his cattle. Packers often provide "kill sheets" with such information, either directly or through commission agents. The USDA will, for a fee equal to the expenses involved, provide grade information on both the quality and cutability scales.[1] As would be expected, the extent to which all these measures are employed varies with the level of ability of the producer.

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[1] This reference is to the USDA's "Carcass Evaluation Service". Expenses of the grader must be covered by the producer.

The variable nature of much of the "data" which is used as input to decisions makes evaluation difficult. Costs of marketing via the different alternatives are needed. Though less arbitrary and subject to calculation, producer understanding of the true costs of marketing (as will be noted later) is not always complete.

Whatever the degree of sophistication, the choice of outlets must be made. If the terminal is chosen, developments will be similar to those for the producer who habitually sells at the terminal (though relations with a commission firm may not be as close). Auction personnel provide similar assistance but leave more of the decision responsibility to the producer. Whether one of these two or the direct alternative is chosen typically depends upon comparison among formulated expectations of net returns.

The producer interested in selling direct typically has several buyers bidding for his cattle. These will be considered, but in areas where terminal activity remains strong, price levels on the terminal market are often noted as relevant standards.[1] Price bargaining may then develop until agreement is reached. The degree to which weighing conditions are included in the negotiations varies. Attention will be given consideration of weighing conditions when carcass methods of

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[1] There is considerable concern over the impact which this tendency is having on the price structure. Reporting activities have long been terminal-oriented and changes made only recently to cover direct sales. The feeling is that continued reliance on terminal price quotations will result in a situation in which the bulk of transactions will be related to activity on a market of declining relative importance, with lower and possibly more variable prices (as the terminal volume decreases and becomes more susceptible to influence by bidding activity) the likely results.

selling are discussed. Brief mention should be made here of the extent to which weighing conditions can become a "cost" and, even when selling on a liveweight and grade basis, offset any supposedly superior price. Time of weighing is a problem. A typical agreement is to weigh the cattle off the truck after early morning delivery at the packing plant. Most trade personnel agree that cattle weigh the least in the morning. In addition, many producers "condition" their cattle by allowing them access to only dry feed the evening and night before shipment. Early morning weights will thus go down even more. Another somewhat arbitrary practice which can become very costly to the feeder is that of the buyer taking a "pencil shrink".[1] In those instances where the packer does not know how the cattle will be handled before shipment, pencil shrink of up to 5 percent may be taken. Unless the feeder incorporates this "cost" in bargaining, a transaction considered as favorable might, in actuality, be a very poor one.

The conditions of exchange are very much a matter of concern as methods of selling live cattle undergo transition. It is easy to note that "pencil shrink" might permit a packer to outbid others or exceed the terminal market in terms of price. When sale is on the basis of carcass value, such conditions of exchange are even more important as will now be noted.

A typical method is for a schedule of prices to be negotiated by weight and grade classifications before the cattle are shipped. Weight

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[1] This is the practice of writing some level of shrink into the sales agreement to protect the buyer against excessive fill, etc., which artificially "inflates" the live weights of the cattle.

and grade are then the remaining variables in valuation of the animal.[1] Carcass weight will vary, depending upon whether the carcass is hot or cold. When the carcass is weighed hot, a tare is often employed by the packer to account for the decrease in weight when chilled, with the amount of the tare varying among packers. If the carcass is weighted after it has been washed and shrouded, a tare may be employed to account for the weight of the shroud and shroud pins. Again, the amount of the tare may vary among packers. It is not unusual for certain fat deposits to be removed before weighing the carcass, especially when the carcass will move into the retail chain trade.

Similar types of variations are noted in grading practices. Since carcasses will grade higher after chilling, the packer could have those carcasses purchased on a grade and weight basis graded while still hot. The value to the producer is thus affected and the thoroughly chilled carcass will merchandise effectively at this grade, attain a higher grade, or move up to a more valuable classification.

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[1] The president of a large midwest beef slaughtering operation, in commenting on the "conditions of exchange" to be discussed here, indicated a detrimental effect on his firm's competitive position. He illustrated his point with the following example. His buyer might have offered $24 per cwt. for a lot of cattle to be purchased on a liveweight and grade basis and moved direct to the packer. The $24 was on the basis of a $40 wholesale market for beef. A competing buyer offers only $23.50 on a live basis, but then succeeds in buying the cattle by offering $42 for the cattle "in the beef". The packer pointed out that packers' costs of operations do not differ markedly and that the wholesale market they face is essentially the same. The packer's point was this--that another packer could not continually pay exorbitant prices on a carcass basis unless this were being offset in some other way. Variable weighing and grading procedures were suggested as the means by which this was being done. This perception of activities in the market was echoed by one of the large commission firms under completely independent circumstances.

In addition to uncertainties of weighing and grading procedure, there is the added problem of maintaining identity of the carcasses. At present, there is no effective means of removing these possibly important uncertainties.

Two elements of activity which have been largely ignored in discussion of producer activity are those of time and product specification. It might be observed that producers have up to 30 days leeway in making their decision to sell slaughter animals. The time aspect of any attempted production adjustment is perhaps more important. If favorable live cattle prices prompt producers to bid up the price of feeder cattle, feeder cattle producers begin to show a quantitative response after one year of favorable prices. The response after two years is even more evident, and the adjustment has largely run its course by the end of the third year.[1] Considering the time required to finish steers or heifers, up to five years are required for the producer to adjust the level of production. Adjustment in the type of animal produced, except within the attainable variations of varying feeding programs, might take even longer.[2]

The product specification element requires little attention here. Federal grades, which have been discussed at various points, provide the basic means of product specification in both live and carcass methods of selling. When the carcass method is employed, there is no need to estimate grade as is true with the liveweight methods.

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[1] John Ferris, "Factors Affecting Beef Prices," (Manuscript in progress, Department of Agricultural Economics, Michigan State University).

[2] From these time dimensions of production come the tendency toward over response to price changes, approaching speculative levels at times.

The problems of estimation were discussed when packer buying activities were examined. Producers are the selling counterpart. The extent to which packers are capable of buying to meet retailer specifications without equally detailed descriptive standards for the live animal is, as noted, questionable. Mention was made of the lack of adequate incentives to producers as a result of the absence of rigorous and refined descriptive procedures, criteria, and standards.

Federal grades are important components of reports covering live cattle trade activity. Typically, grades are divided into thirds and labeled high, middle (or average), and low (as for example, high Choice, middle Choice, and low Choice). In interpreting these reports, producers' ability to grade their cattle will be an important determinant of the value of the reports. Buyers were observed to make errors of significant magnitude and producers are no more proficient as graders. Consequences of producer sales activities might thus be measured in terms of price while errors in grade estimates could be the causal factor in any deviations from expectations. These and other considerations which relate directly to market news activity will be given detailed attention in Chapter V.

Evaluation

A brief evaluation at this point serves two purposes. First, it is a fitting climax to attempts in this chapter to present basic activities in the marketing of beef in such a manner as to reveal fundamental communicative dimensions of the system. Second, evaluation

of the system's communicative capacity should develop a discerning attitude toward market news activities, to be examined in Chapter V. Evaluatory emphasis will be on the general or overall shortcomings of the system.

Evaluation of a process such as the marketing of beef is circumscribed by inability to attain realism, in presentation and subsequent evaluation, via verbal procedures. The most productive approach would seem to be an attempt to record the fruits of a mental conceptualization of the process in its entirety. Attention is drawn to Chapter III, especially pages 110-35, which provide the basic criteria to be employed.

Absence of Provisions for Feedback

Feedback permits the decision maker to review the consequences of his decisions and make needed adjustments. There is at present no effective feedback loop from consumers to producers which would permit evaluation of productive efforts as culminated in the producer's selling decision.[1] Adjustments which occur are those motivated by transfer of price signals back through the system. Typically, a substantial time lag is involved as the producer seeks to determine the implications of observed price variations, identify their cause, and relate them to level or type of production. At best, the "signal" has a hazardous course to run.

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[1] There is room for argument that none is needed. The producer, after all, judges the consequences of his decisions on the basis of his experiences in the live cattle market. The purpose of feedback, however, is to facilitate adjustment. Accurate indications of occurrences at the consumer level would speed productive adjustments and eliminate the lag (and as will be seen, possible distortion) when the indications must be filtered down through the system.

Increased interest in the wholesale beef market, and information from this market, constitutes something of a substitute. However, the effectiveness of this as a feedback possibility varies with (1) the retailer's ability to accurately interpret consumer demand, (2) the ability of the producer to identify the causal factor in price changes in the wholesale market, (3) the possibility that retailers might incorrectly interpret such indicators as increased consumer expenditures as a desire for more services, and (4) the producer's ability to relate changes in product demand as evidenced in the wholesale market to his own activities. The possibilities are not very exciting.

There are feedback possibilities at most of the other junctions in the system. Often, they are limited in capacity and situation oriented (as when the packer provides information on the carcass characteristics of the producer's cattle) and are seldom employed to the extent which would be desirable. When used, effectiveness is reduced by other attributes of the system which are to receive non-favorable evaluations.

Inadequate Means of Product Description

Federal grades appear inadequate as a descriptive terminology due to their lack of consideration of important value related attributes of beef carcasses and beef cuts. The importance of the lack of an adequate set of standards for purposes of product description and as an indicator of value cannot be overstated. This becomes, because of its relation to many other important dimensions of the system, one of the most serious obstacles to effective communication processes in the marketing of beef.

The federal grade standards correspond to consumer criteria of choice only in a very general way. Retailers must evaluate consumer preferences, must identify the actual trends or changes, without benefit of a standardized descriptive or classificatory base. Any errors made are then incorporated into a more detailed set of specifications for purposes of procurement. Further complicated by the many differentiated demands for beef, which are combined into a heterogeneous set of classifications, packers must interpret the demands of retailers and convert them to a procurement pattern for the live animal. But most of the live animal trade is on a live basis. Except for those exchanges made on a carcass basis, both grade and any other indicators of value must be estimated via physical inspection of the animal. Errors of considerable magnitude are made. The producer must estimate grade and other characteristics which appear related to value.

Under these conditions, there is little assurance that the beef cut indicated by the consumer as being desirable will have impact at the producer level and motivate desirable types of production. Even if there were a sufficient and operative descriptive terminology, one must bear in mind that meaning (and therefore the motivations for adjustment) is in the participants, not the words. The message has a hazardous course to run at best. Inadequate or incomplete terminology compounds the likelihood of error, perpetuates a static and non-responsive system.

Variable Conditions of Exchange

Freely negotiated transactions are theoretically powerful means of promoting orderly and coordinated activity. This is true in practice

only when the conditions of the exchange are known and equally well understood by both seller and buyer.

In the present system, the point at which these conditions are least likely to be met is in the live cattle market. Sufficient discussion has been given to indicate how lack of awareness of all costs on the part of the seller, when selling via carcass grade and weight methods, might lead to incorrect decisions. This method is one of the most attractive features of direct selling because it eliminates the need to estimate grade and live-to-dead yield. Because the conditions of sale are not fully understood, a "false" price relation between direct and terminal (as non-direct) methods of selling can result. Such conditions could prevail only because of incomplete communication of information concerning conditions of exchange and their possible consequences. Further implications arise from the fact that (1) incidences of such happenings are often publicized within the industry and inhibit development of what could be a progressive step in selling, and (2) the capacity of price as a director of activity is reduced because price is in effect biased.

The Limited Role of Price

Sole dependence cannot be placed on price as a regulator and coordinator of marketing activity. Price can accomplish such a herculean task, if at all, only when a number of conditions are met. Two of the more important of these, complete and unambiguous product identification and complete understanding of the conditions of exchange, are not always met in the marketing of beef.

Consider a buyer and seller, at any moment in time, who "successfully" bargain the transaction of a supposedly specified product. If

in fact the two were thinking of two (even slightly) different products, one party or both will be hurt by the result. Suppose the seller differed in that he did not recognize one attribute which affects the value of the product at some other point in the system. The incentive he receives, the price signal accruing from the transaction, will be incorrect by the value added or detracted by the unrecognized attribute. By allowing time to vary, another result of inadequate product description may be noted. The packer must relate procurement of the live animal to the dictates of his outlet. A time lapse is involved, but may be ignored by assuming all price expectations are correct. Price for the live animal may vary with supply, but this is a "proper" variation in price. However, price cannot effectively direct or coordinate packer activity in this sphere of activity if the packer cannot relate (cannot describe) the attributes of the live animal to needs of his customers in the wholesale beef market. In theory, an error would result in a price adjustment the next time purchases are made. But the following purchase will face the same burden--the necessity of guessing the attributes of the product being purchased.

The impact of conditions of exchange hardly needs further attention. Inability to recognize the "costs" of varying weighing practices (the condition of exchange previously discussed)or varying grading practices may artificially inflate or deflate the transaction price so as to rob it of any effective directive capacity.

Price is further burdened as a coordinator of activity, a conveyor of information, by the heterogeneous nature of beef as a product.

There are many types of beef, confronted with different demands. This means coordination is required at any one point of time or at any stage of product preparation across the different types of beef.

Of course, price variability may prove detrimental to the communicative ability of participants. Before adjustment to a price change will take place, considerable time is often required before a trend (which merits adjustment) can be differentiated from a short run fluctuation (which often does not).

Out of the complexity of the system, with its inherent variability and often indeterminate pricing processes, arises other obstacles to effective communication. Speculative activity is one. Especially noticeable at the producer level is the tendency to overreact to a price change once the change is perceived and ruled important. Not unrelated to this is the "identification problem". Price may be seen to change, but the system participant is often not able to isolate the causal factor. Appropriate adjustment may be in one direction if the price change is due to a shift in supply, in another or even the opposite direction if due to a shift in demand.

The various comments on price, and the effort has been far from exhaustive, lend solid support to some important implications to the communicative capacity of the system. Price is an important conveyor of information, a message which is always noted. It should be clear by now, however, that <u>price may convey the wrong message</u>. Equally clear is the obvious fact that it is not price per se which causes such a situation, but the nature and operation of the system from which price evolves.

Perceptual Inconsistencies

Among the requisites of effective communication presented in Chapter III was one concerning the need for consistency in the perceptual fields of the source and receiver. This requisite is violated countless times in the beef marketing system, usually because of the apparent inability of participants to establish a sufficiently broad perspective. One basic example is presented here. Others will be incorporated into Chapter VI.

Considerable attention was given the impact that marketing agencies might have had on participant activities in the live cattle market. The commission firm has been active and outspoken in this regard. The role of the commission firm is precisely that of the C-role performer as discussed in Chapter III. It was noted there that the C-role performer will survive only as long as the receiver is in need of him to, among other things, assist in the evaluation of information coming from one or more sources. The parallel is made complete by identifying the producer as receiver and the packer, news reporter, researcher, etc., who have informed the producer concerning nonterminal methods of selling, as sources.

The role of the commission firm has been threatened and the reaction has been to denounce direct selling as non-competitive, etc. Missing is any strong effort by the commission firm to establish what its role might be in a structural system in which most sales are direct. At least two alternatives appear to be open which would help insure the viability of the commission firm and contribute greatly to the system as a whole. First, there is the possibility of acting as an intermediary between the producer and the packer in

negotiating the sale of cattle to be moved direct. Such services are known to have been requested of commission firms, especially in those areas where the production unit is relatively small. As yet, the commission firms have made little response.[1] Second, the commission firm might prove to be both an acceptable and effective supervisor of the weighing practices, grading practices, etc., which appear to be so variable in direct and especially carcass grade and weight sales. Though they have denounced these practices, commission firms have made no concerted effort to become a part in correcting the situation.

This apparent misperception of role hinders the communicative capacity of the system by creating confusion and antagonism. In addition, any contribution which might have been made by not only identifying supposedly inequitable practices but in taking positive steps to improve the situation has been lost.

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[1] Even when such attempts at adjustment have been made, there are indications producers are not ready for the change (even though they may have requested it). Unwillingness to commit supply is one source of reluctance. A large cooperative selling agency in the Midwest reported the lack of success in such efforts on their part. They suggested that given the present structure, their role might well be one of assisting producers located far from any important terminal.

CHAPTER V

APPRAISAL OF SUPPLEMENTARY INFORMATION SERVICES

To this point, emphasis has been on the marketing system as a whole. Attention will now be turned to appraisal of those services designed to supplement the informational flows inherent to the system. Their level of attainment as effective communication systems are important determinants of the nature and relative efficiency of the beef marketing system.

The services to be considered are those of the USDA (Federal-State Market News Service) and the National Provisioner, Inc. The USDA is the most important source of information in the live cattle market. Efforts to report activity in the wholesale market for beef have come largely in the last five to six years and are increasing. The Provisioner's "Yellow Sheet", a commercial report, is the most important source of information concerning wholesale exchange activity.

Appraisal will begin with USDA activity in the live cattle market. USDA and Provisioner activity in the wholesale market will then be considered. Next, attention will be paid the emerging "problem" in pricing as the relative volume of live cattle sold through terminal markets continues to decline. Also due for consideration is the possible impact of increasing formula pricing, with the "Yellow Sheet" as base, in the wholesale market. Finally, the

services will be briefly evaluated concerning their apparent ability to fulfill the needs of system participants.

USDA Activity in the Live Cattle Market

The Livestock Market News Service is a branch of the Livestock Division of the Consumer and Market Service, USDA. Direction and coordination begins at the Washington office of the Branch Chief, is facilitated by area supervisors, and is culminated in the form of reporter activity on markets throughout the country. All offices are connected via the leased teletypewriter lines.

After consulting with the Washington office, a total of 28 market news offices were selected as important in reporting exchange activity in fed beef. A questionnaire was constructed and sent to these 28 offices.[1] Of the 28 questionnaires, 20 were completed and returned. One reporter refrained from answering because fed beef was not sufficiently important in his area. Since there was some question as to whether this particular office should have been included initially, the "population" was reduced to 27 offices.

Evaluation of Questionnaire Results

Care was exercised in evaluating the questionnaire results for several reasons. First, the area is not highly amendable to questionnaire techniques. The technique was used as the only feasible alternative given the scope of the project as a whole. A second and related reason for care is intermarket variability. Since the questions

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[1] A copy of the questionnaire is included in Appendix I.

concern reporter activity, there is need for realization that different responses might evolve from differences in interpretation.

Several safeguards against such possibilities were taken. First, the results were appraised against the background of considerable exposure to the marketing of beef cattle and dressed beef. Over a year of specific study included interviews and interaction with system participants from the producer to the packer. Interviews with producers, marketing agencies, and packers were conducted in Michigan, Illinois (Chicago area), Iowa, and Nebraska (Omaha area). Time was spent with reporters on five different markets.

Second, the questionnaire was discussed with personnel in the Washington market news office in an effort to isolate those areas where intermarket variability or different interpretations might cause problems. Visits were paid to three important Midwestern markets on a follow-up basis (after the questionnaire was returned) to clarify the interpretations which were employed by the reporters. The reporter on a fourth Midwestern market read an earlier draft of the questionnaire and suggested changes,many of which were incorporated.

Finally, and perhaps more importantly, is the nature of the evaluation which was conducted. The results were examined for indications of shortcomings as a communication system. No statistical procedures or quantitative measures were employed--the level of measurement is hardly sufficient for such. Isolation of possible problem areas, not measurement of their magnitude, was the objective. When questions were considered which might have been interpreted in different ways, every effort was made to indicate those possibilities.

Three different but related aspects of reporter activity were selected for examination. First came a look at reporter activity as related to, and affected by, the operating environment. Following this, the reporter's perception of the receiver and the receiver's operating environment was considered. Third, more direct attention was given reporter activities.

Operating Environment of the Reporter

One important dimension of reporter activity is the organizational structure of the Market News Service and the corollary procedure of operation. As noted earlier, the source cannot operate without being affected by his social and environmental surroundings. The hierarchical structure of the Market News Service largely defines the role of the reporter. Reporters' perception of the prestige and importance afforded them by other participants in the system affects the enthusiasm with which role performances are conducted.

Service administrators stress standardization in procedure. Standardization in terminology and the general order of message (report) construction is considered necessary for valid intermarket comparisons, and rightly so. However, the dividing line between standardization of procedure and a static system is difficult to recognize, and an effective median approach is difficult to maintain if recognized. General procedure for the reporter is established via operational directives, maintained at each office in the form of the Reporters Handbook. Theoretically, the directives establish procedural guidelines and leave sufficient flexibility for the reporter to adapt to evolving situations.

Reporters were asked to choose those alternatives which best described their view of the position they held (Question I-10).[1] Nineteen of the 20 indicated they considered the position a challenging one (alternative b). This alternative may have been viewed as an "obvious"answer, but personal interaction with reporters suggests they do consider their position important. More important, perhaps, is their perception of the views of others. Twelve of the 20 reporters responded to one or both of the alternatives (c and f) which indicated they felt their position was given less prestige or importance than was deserved.[2] Nine of the 12 rated their chosen alternatives as to importance and seven of these nine attached major importance to the alternatives relating to prestige.

Technically, "prestige" refers to the value placed on a position in a system, regardless of who occupies the position. "Esteem" is the value placed on a person, regardless of the position he holds. Esteem does not seem to be the problem. Ten of the 20 reporters reported having been questioned during the past year concerning their

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[1] The appropriate questions will be introduced in this manner as the various areas are discussed. In general, those alternatives which are basic to the criteria of evaluation will be stated in the discussion. For a more complete statement of each alternative, refer to the indicated question in Appendix I.

[2] A note of caution is required here. Whether the reporter will receive direct indications he is considered important (e.g., being asked to speak before an interested group) will vary by markets. Attention here, however, is on how the reporter <u>feels</u> the position of reporter is viewed by others, not on the number of times he receives or does not receive such direct indications.

qualifications (Question II-8, part a). However, this should not be regarded as serious questioning of their expertese. All reporters are questioned in an indirect manner by buyers or sellers who ask them to "guess" price after the sale has been made, etc. Typically, reporters are adept at such procedures, check on their ability to estimate grade almost weekly, and in general, are conceded their expertese. That they are considered trustworthy is obvious from the interest of both buyer and seller in the reporter's appraisal of the market as trade progresses. Reporters appear quite proficient at establishing and maintaining an air of impartiality. Because of these attributes, the "position" of reporter is favorably viewed by system participants.[1]

The reporters' response apparently reflects their belief that USDA market news activities as a whole are not given due credit. This has long been a matter of concern. Producers in particular are prone to use the reports conveyed by the mass media with little attention to the originator of the reports. Commission firms base their news letters on USDA reporting activities, and the producer does not always recognize this. A recent publication indicates the relatively low importance packers attach to USDA reports--but many use them.[2] Overall, the tendency is to take USDA market news activity for granted.

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[1] As one reporter indicated, the view of others will be affected by the person who occupies the position. A favorable image as a person serves, in this instance, to promote a favorable view of the position as well.

[2] Organization and Competition in the Livestock and Meat Industry, op.cit., p. 56, Table 5-12.

More important than the source of discontent is the impact (if any) on the reporter. Two cross-checks were written into the questionnaire to give some indication of the impact. There was no apparent relationship between such concern and the likelihood of reporters' establishing contacts with information users to solicit suggestions (Question II-6, part b).[1] One of the possible impacts would have been a decrease in initiative and enthusiasm concerning such activities. Conversely, there was an apparent relation with a tendency to rely on established procedure in reporting. Reporters concerned over the prestige awarded them by others intended to rely heavily on procedure established by superiors and/or other offices (Question II-7, alternatives a and b). The seven which had indicated most concern (through their ratings) included the one reporter of 20 who indicated sole reliance on established procedure and two of the four who rated these alternatives above others which viewed the reporter as trying to establish and meet the needs of receivers (alternatives c and d).

Seven of the 20 reporters indicated they had not initiated contacts with information users (receivers) to solicit suggestions within the past year (Question II-6, part b). Most of these negative replies came from offices which do not mail reports. Those offices which mail reports revise their mailing list yearly and ask for suggestions at that time. Many of these gave "revision of mailing list" as the only reason for such contacts. One reporter who reported no such contacts suggested it was the perogative of administrators to say when such

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[1]As will be observed later, reporters do not exhibit great initiative in establishing such contacts. However, those reporters concerned about the prestige awarded their service were no more deficient in this respect than the remaining reporters.

contacts should be made.

Eleven reporters reported having made adjustments within the past year at the direction of administrators (Question II-6, part c). Most of the adjustments concerned changes in time of reports, adjustment in the way the report was written (apparently to conform more closely with standard procedure), and changes in use of live animal grades to conform to changes in the carcass grades. Three reporters mentioned efforts to get yield grades into the reports and changes in the method of reporting carcass grade and weight sales to prevent confusion (apparently over varying weighing conditions). Eight reporters indicated they had not passed any suggestions from information users to administrators within the past year (Question II-6, part d). Significantly, five of these eight reporters were among the nine who indicated they had made no changes during the past year as the result of administrative directives.[1]

These relations suggest that the task of recognizing the need for change and effecting needed adjustments is retained in the hands of administrators. This has established a role for reporters, which, with few exceptions, neither requires nor motivates the reporter to interact frequently with information users concerning their needs and how they might best be met. Conversely, 18 of 20 reporters indicated activities within the past year to promote the use of their efforts by parties to the marketing process (Question II-8, part b).[2] Invariably,

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[1] The five offices are widely dispersed geographically, spanned a wide range as to volume, and included offices with emphasis on both range and terminal sales.

[2] The two remaining reporters made no response to this question.

the reasons given involved the desire to increase dissemination of reports, acquaint more persons with their availability, get fullest possible use of the reports, etc. Apparently, much more emphasis is placed on expanding coverage and dissemination than on interacting with users concerning the value of the reports being disseminated and how they might possibly be made more valuable.

The location of the responsibility for recognizing needed adjustments and the authority to enact adjustments is largely immaterial, so long as needs are recognized and needed changes made. Effective provision for feedback facilitates the recognition of such needs and possible adjustments. Viewed overall, replies to several of the questions have indicated the absence of any concerted effort to promote feedback. The reporter does not see as part of his role efforts to interact with receivers and pass on information to administrators concerning needed changes in procedure, etc. Yet, the reporter would seem to be the most logical means of maintaining rapport between the administrators of market news activities and the various receivers of disseminated information.

Inadequate provisions for feedback erect a number of barriers to effective communication. A lack of complete understanding of the receiver and how his needs might best be met is a potentially important barrier. Concerning the current discussion, two tentative conclusions are drawn. First, if the basic responsibility of need recognition and adjustment is to be retained by administrators, their task is made unnecessarily difficult by failure to use the reporter as a means of feedback from receivers. Second, and more hypothetical

in nature, the absence of obvious interest by reporters in the needs of their receivers may be one causal factor in the apparent lack of prestige awarded USDA market news activity as a whole.

The Reporters' Perception of Receivers

The effective source must understand the needs and capabilities of the receiver, must recognize the implications of the social system within which the receiver operates. Berlo suggests that "If we limit our discussion to effective communication, the receiver is the most important link in the communication process."[1] Concern has been evidenced over the apparent absence of direct efforts by the reporter to interact with receivers to improve understanding. At a slightly more general level, perception of the setting within which the receiver operates is important.

Reporters were asked to indicate and rate by importance those parties they consider users of the information they disseminate (Question II-5). The question was developed with three purposes in mind. The first interest was in the ability of reporters to differentiate between users of information and the mass media, which were offered as alternatives, as transmitters of information.[2] Whether such ability should have been expected is questionable. At any rate, only one of the 20 indicated the mass media were not users, but were means of conveying information. The remaining 19 all indicated the mass media as users.

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[1] Berlo, op.cit., p. 52.

[2] Included were radio, television, newspapers, and the wire services, AP and UPI.

A second interest was in the relative importance given the mass media if they were included. The validity of the answers concerning this issue was nullified by the perspective adopted by reporters in answering. The follow-up interviews clearly indicated that the mass media were rated high in importance (when marked) because they were the means of getting the information to producers. Since the concern was whether the demands of mass media were given too much attention in preparation of reports, such a perspective in answering destroyed any significance the replies might have had.[1]

A third interest was in the relative importance given the various participants to marketing activity, the users of the information. Eighteen of the 20 reporters rated producers as first in importance. Of the remaining two, one suggested all were of equal importance, and the second rated producers and packers of equal importance. Ignoring the ratings given the mass media, commission firms, packers, dealers, and auctions were generally rated next in importance. The order varied, with some indication the reporters emphasizing direct sales considered packers relatively more important.

Too much emphasis on any one participant, such as the producer, may inhibit effective assistance to all participants--including the producer. Consierable attention has been given the interrelated nature of the system and in establishing the perspective that development at any one level of activity is predicated on development in related areas. If the producer is the most deserving of assistance,

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[1]A later question, written in as a cross-check for this intended evaluation, will permit examination of the impact of the demands of the mass media.

the effective way to provide that assistance is to faciliate informed decisions and activities throughout the system. In particular, given the capacity of the packing industry and the need for meeting operational requirements, any means of reducing the uncertainty and variability confronting the packer is likely to improve the producer's position.

Reporters were queried concerning their perception of how producers employ the information in their decision processes (Question II-10).[1] Ten of the reporters selected an alternative indicating producers use the information in conjunction with costs of marketing to choose among markets and decide how much more he would receive on the chosen market (alternative b). Only four selected the alternative suggesting the producer seeks to establish probable prices and returns at the various markets and choose the market most likely to yield a reasonable, not necessarily the highest possible, return (alternative c). This alternative may have been deemphasized because no explicit mention of costs was made. Only three reporters chose both (b) and (c), a combination which would permit intermarket comparison in terms of probabilities. Based on interviews with producers, the use of subjective probabilities is widespread.

Operational Procedure of the Reporter

Reporters were asked to select those alternatives which best describe the manner in which their efforts are organized and conducted

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[1]In examining the responses to this question, alternative (d) is ignored. The follow-up interviews indicated some reporters interpreted the "evaluation and/or interpretation" part of this alternative as suggesting they would then be trying to make the decision for the producer.

(Question II-7). Reference was made earlier to part of the alternatives, namely the two indicating emphasis on procedure as established by superiors and reliance on other markets (alternatives a and b). Among the other relevant alternatives was one which emphasized the reporting of facts and allowing the receiver to choose the needed information (alternative c) and two which emphasized attempts to understand and meet the needs of receivers (alternatives d and e).[1] Reliance on established procedure and emphasis on reporting facts are both desirable traits--when in the proper perspective. Neither should be given sole emphasis at the expense of efforts to understand and meet the needs of receivers. One or both of the alternatives suggesting the use of empathy (d and e) were chosen by 13 of the reporters. The alternative concerning reporting of facts for receiver choice was selected by 15 reporters and on 12 of these occasions, the alternatives were rated as to importance. "Reporting facts" was chosen alone by three reporters, rated first in importance among several alternatives by three others. On six of the 15 occasions when selected, this alternative stressing the reporting of facts was not accompanied by either of the two alternatives stressing efforts to understand the needs of receivers (alternatives d and e). Often, accompanying alternatives were those emphasizing established procedure or activities at other offices.

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[1]More specifically, (d) and (e) were intended as highly simplified expressions of the inference and role-taking theories of empathy respectively. Berlo emphasizes that man uses both. Berlo, op.cit., p. 127. Thus, selection of both (d) and (e) would not be surprising.

Six of the 20 reporters thus placed emphasis on reporting facts for receiver selection and in a manner corresponding to established procedure, activities in other offices, or both. The two alternatives stressing the needs of receivers were ignored in spite of the fact that the procedures they entailed were suggested "subject . . . to prescribed operating limits." Again, it appears some of the reporters do not see efforts to understand the needs of receivers as part of their role.

Emphasis on standardization continues to emerge. Regarding one aspect of standardization, reporters were asked how they handled atypical cattle in forming a representative price range for a certain grade and weight range of slaughter steers (Question II-1).[1] Eleven of the 20 reporters chose one or more of the alternatives which specifically stated the atypical lots were to be ignored and presented no qualifications (alternatives a, b, or c). Seven either qualified one of these alternatives or employed the open-end alternative. Typically, the qualifications suggested a price range be used for the bulk of the cattle and the atypical lots be separately described with comments such as "few lots at (price)". One reporter chose to adjust the price range to include the atypical groups (alternative d).

There are several ramifications of this apparent lack of standardization. First, the validity of intermarket comparisons is affected.

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[1]What cattle will be considered "atypical" will vary from market to market and with the seasons of the year. This was indicated in stating the question and reporters were asked to accept the existence of atypical lots of cattle when such were referred to in the question. In responding to question II-2 (a related question), no reporter selected fewer than three of the alternatives presented there as potentially indicating atypical lots which could lead to a price discount.

Might the producer choose market X over Y because the reporter at Y indicated "several lots" at a lower price? The same thing could have held in market X, but was not mentioned. Second, ignoring the atypical lot means the producer who has a particular type of cattle which might subsequently be discounted is not informed, nor is the packer who needs this type of livestock. Related to this, only two reporters gave any indication they would identify the reasons for the discount in their qualifications. This tendency is observed in actual reports where weight (especially extreme weights) is usually the only physical characteristic employed in explaining prices which vary from the "bulk" price. The result is that the producer or packer must be very familiar with the market in question to be able to tell what caused a lower price in a qualification such as "several lots . . .".

Reporters rely on their own judgment plus confirmation from buyers and sellers in establishing a call of market price in terms of the previous session (Question II-3). Most reporters accept buyer and seller comments with reservations and attempt to check with the other party in a sale. One of the reporters depended entirely on selecting typical lots of cattle and observing the price change (alternative c).

Demands of the mass media appear to place restraints on reporters' efforts to make their reports as free of ambiguity as possible. Though many reporters appear to recognize the usefulness of procedures which could be called redundancy, their efforts to employ them are restricted by mass media demands for a short report. Thirteen of 20 reporters indicated they would prefer to add words, phrases, or arrange construction of the report to minimize the likelihood of misunderstanding

(Question II-9, alternatives b, d, or these in combination with c). Seven of the 13 also indicated they tried to make the report "as complete and clear as possible, subject to mass media demands for a short or brief report" (alternative e). Six of these seven reporters rated the alternatives as to importance, and alternative "e" was rated first in importance each time. Two other reporters placed sole emphasis on doing their best in the face of mass media dictates; a third suggested the reports were tailored to mass media requirements.

Apparently, the mass media exert influence on reporter operations. The inability of reporters to recognize that the mass media are not users of information may be one contributive factor to this situation. If this undesirable influence is continued or increased, the problem of choice of channels will become important.

One of the more important aspects of reporters' operations is the use of terminology in calling the trend in a market in terms of the previous session. Producers pay particular attention to these indications of trend. Consequently, standardization in interpretation and use of the terminology is important (given the choice of a terminology).

In addition to its importance, this is a difficult area to evaluate. The approach chosen was to indicate the market situation on a "first day-second day" basis and ask the reporter to select alternatives best describing the change or trend (Question II-11). An open-end alternative was provided to permit the reporter to qualify his response if desired. Many factors affect the price of slaughter steers and heifers. The market situations were described in terms of steers by grade, weight, and price. No indication was given con-

cerning the yield of the cattle and this prompted concern over the validity of comparing responses. Consequently, careful attention was paid the interpretation given this question in the follow-up interviews. The three reporters who were interviewed after completing the questionnaire indicated they interpreted the situations only in terms of the information provided in the statement of the market situations without bringing in other variables such as yield, time of day when most sales were made, etc. Nevertheless, the responses to four of the five parts of this question will be provided in detail to help insure against fallacious conclusions.

Part (a) was worded so as to indicate a trend in price the second day. Early sales on the second day were at a price equal the price of most of the first day sales, but a price of 50¢ per cwt. lower began to appear consistently later in the session. Grade and weight were held constant for the two days. Fifteen reporters chose a specific alternative (as they were requested to do) before writing in their qualification or preferred call--if any. The pattern of responses was as follows:

Alternative	Number responses	Qualifications
Weak to 50¢ lower	10	"Steady early and weak to 50¢ lower late" or its equivalent occurred 5 times; 2 suggested "steady to 50¢ lower" as a possible alternative
Weak to 25¢ lower	1	-----
Steady	3	-----

No specific alternative	6	Mostly steady, instances lower on high Choice steers late; Steady to weak; High Choice weak to 50¢ lower after steady opening; Steady to 50¢ lower on late trade; Generally steady, few late sales high Choice steady to 50¢ lower; Steady to 50¢ lower

Part (b) presented a situation in which high Choice and Prime steers were sold on the first day. On the second day, mixed high Choice and Prime were sold as well as Prime and high Choice separately. The price of Prime was held constant, with high Choice showing some sales lower than the bulk of high Choice sales for the first day. The pattern of responses was as follows:

Alternative	Number responses	Qualifications
Steady	12	Possibly "steady to weak" (mentioned did not know dressing percentage); Steady (assuming no more than a $\frac{1}{2}$ - 1 percent difference in dressing percentage between the two days)
Weak to 25¢ lower	6	Steady to 50¢ lower
Weak to 50¢ lower	1	Steady to 50¢ lower
No specific alternative	1	Steady to 25¢ lower

Part (c) was poorly worded. The range in prices the first day was too broad and three reporters expressed concern over the reason for the low beginning point of the range for the first day. There was also some concern over the extent of the excess fill and bruise damage (mentioned in the statement of the situations). Therefore, the results will not be presented in detail. One conclusion can be drawn, however.

Seventeen of the 20 reporters chose "steady" as the alternative. Examination of the situation presented suggests that the "atypical" cattle were ignored in choosing this alternative, confirming the previous result. The lack of standardization is again noted as three chose other alternatives and one qualified the call and indicated preference for "steady to 50¢ higher".

Part (d) presented a situation in which the second day differed only in that cattle owned by a producer selling on the market for the first time received a discount of 50¢ per cwt. The pattern of responses was as follows:

Alternative	Number responses	Qualifications
Steady	15	Bulk of high Choice mostly steady, few loads 50¢ lower; Steady to 50¢ lower (Though not qualifications, the following comments were made: An out-of-line sale; Buyers are name buyers versus cattle buyers; Buyer out-maneuvered seller--should have no bearing; Would not happen on this market)
Weak to 50¢ lower	1	Steady to 50¢ lower
No specific alternative	4	Three times: Mostly steady, instances 50¢ lower; Steady to 50¢ lower, mostly steady

Part (e) was the most straightforward of all. On the first day, most sales were at $27.50 with the range $27.00-$28.00. On the second day, sales were primarily at $28.00 with a few loads reaching $28.50. Grade and weight were held constant. The pattern of responses was as follows:

Alternative	Number responses	Qualifications
50¢ higher	16	Mostly 50¢ higher--some $1.00 higher than low side of first day
Strong to 50¢ higher	2	-----
Strong to $1.00 higher	1	Fully 50¢ higher (If $28.00 cattle were comparable to $27.00 cattle of first day, could be 50¢-$1.00 higher. Need to know dressing percentages and number of loads at each price)

No strong and highly definitive conclusions will be drawn from this question. The results have been indicated and attention paid the possibility of different interpretations by reporters. The three interviewed on a follow-up basis indicated this was not likely to be the case. However, it should not be assumed they speak for all reporters. Two or three instances were noted in which a reporter indicated they would prefer information on yield and in absence of this information, assumed negligible variations in answering.

There is certainly sufficient basis to conclude that reporters, when presented with the same situation, will interpret that situation differently. If this is true, then the converse may also hold. Reporters, when employing the same terminology, may be referring to somewhat different situations and/or trends in the market. This is especially true when the reporters must deal with the other variables which were apparently largely eliminated in a simplified statement of the market situations. If there is indeed variation among reporters, then the questions of (1) variation in interpretation among receivers, and (2) variation between reporters and receivers emerge. The situation

which prevails supports the previously voiced contention that meaning is not in words, but in the users (source and receiver) of those words. The need for consistency both among reporters and between reporters and receivers is obvious.

Reporting Activities in the Wholesale Market

Evaluation of reporting activities at the wholesale level will necessarily be brief. Complete reliance must be placed on interviews with parties buying and selling in the wholesale market for beef with secondary information playing a supplementary role. Activities at this level will be described and resulting output appraised in terms of the needs of market participants.

The USDA reports dressed meat trade in both carlot and less than carlot volume. Emphasis is on price by carcass grade and weight and description of trends in terms of price. Information is obtained from established contacts with chain store buyers, jobbers, breakers, etc. In the production areas, packers are important. In Chicago, much of the needed information is obtained from brokers. Reports are disseminated via the mass media and weekly and semi-weekly written reports.[1]

The following are excerpts from the weekly mailed report from Chicago:

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[1] Currently, the USDA is reporting trade in Chicago, New York, Philadelphia, Omaha, Sioux City, Denver, San Francisco, Los Angeles, Portland, and to a smaller extent, in Tulsa and Houston. Reports are disseminated daily from Chicago, New York, and Philadelphia via the mass media. West Coast reports are semi-weekly. On the smaller markets, reports are weekly for local dissemination.

Chicago Weekly Meat Trade Review--
Thursday, March 24, 1966--Vol. XLIX--12

Carlot volume

Compared to last Friday: Good and Choice steer beef strong to 50¢ higher . . . heifer beef strong to $1.00 higher, Choice up the most. Opening trade was slow with prices averaging about steady. However, extremely bad weather north and west of Chicago curtailed live receipts and delayed many incoming fresh meat shipments and this proved very bullish. At the outset hindquarters, rounds, and loins moved well and forequarter cuts, particularly chucks, were slow. However, in the later trade all primal beef cuts met a fairly good demand. Supply only moderate, most plentiful early, bulk grading Choice . . . Steer and heifer beef: Choice steer 500-900 lbs. $44.50, Good 500-800 lbs. $41.00-$42.00 . . . Choice heifer 500-700 lbs. $43.50, Good $40.00-$41.00.

Less than carlot volume

Compared to last Friday: Steer and heifer beef unchanged . . . Offerings in all classes of fresh meat were moderate for the period to date. Choice was the predominant grade . . . with somewhat more carcasses scaling 500-700 lbs. than 700-900 lbs. . . . Trading in beef carcasses was slow every day. Trading very slow and demand narrow for arm and square cut chucks, prices declining 50¢-$1.00 and weak at the downturn. Demand only moderate for ribs . . .

Chicago wholesale meat market quotations (less than carlots)

(Choice) Steer Beef	500-600#	600-700#	700-800#
Carcasses	$44.50-47.50	$44.50-47.50	$44.50-46.50
Hindquarters	51.50-54.50	51.50-54.50	51.50-54.50
Rounds	52.50-55.50	52.50-55.50	52.50-55.50

Reporting activity by the "Yellow Sheet" is centered primarily around the Chicago market. Detailed information on various packing-house byproducts is provided in addition to information on fresh meat. Emphasis is on carlot volumes and prices reported are "end of the trading day" prices. Excerpts from the mail version of the "Yellow Sheet" for January 3, 1966 are shown below:

Butcher cattle (carcass carlot), general range

Heifers and steers market rather mixed, with some sales or offerings Choice steers from last week's kill at somewhat

lower prices and steady prices for current product . . .
Top half: Most movement Good heifers and Good steers reported steady at quoted list, and also offered. A number of loads Choice heifers 500-700 lbs. sold at 38½¢ c.a.f.[1] Chicago and Chicago basis. Selected loads brought 39¢. Choice steers 500-700 lbs. and 700-800 lbs. sold generally steady, especially for shipment Tuesday and Wednesday . . .

U.S. grade carcasses

General range		Top Half
38½-39	Choice steers 500-600#	39
unquoted	Prime steers 700-900#	unquoted

Primal cuts--carlot (U.S. Choice and equal)

	Heifers	Steers
Fores, 500-700#	33½	33½
Hinds, 500-700#	44½	47-47½

The two services were appraised with regard to procedure and content of the reports. Though related, the two were considered separately for purposes of convenience.

An air of controversy has surrounded the "Yellow Sheet" for years. Many charges have been levied at the report, usually concerning the impact of the report on pricing processes at various levels in the system. The extent to which the charges are justified must largely await a more specific analysis. However, the procedure by which the reports are prepared should provide considerable insight into the impact of this service on the system as a whole.[2]

Established contacts with buyers, sellers, and agents in the wholesale market for beef provide the basis for the development of the

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[1] Cost includes freight.

[2] Much of the development concerning procedure will be on the basis of interviews with system participants which provide information to the "Yellow Sheet" and/or use the ensuing reports. "Yellow Sheet" personnel are not available for in-depth interviews concerning their operation.

"Yellow Sheet". Active daily in the market, these "contacts" are in a position to meaningfully evaluate the "Yellow Sheet" as a source of information.

Packers are virtually unanimous in agreeing that the "Yellow Sheet" is a report of the national carlot market for carcass beef. Packer perception of the impact of the report then varies with the nature--especially the size--of their operation. The national packer generally indicates the report typifies the market in which they are active. Though they may be critical of other aspects of the report, they usually do not find serious fault with the price levels or ranges in the report. They deal in volume and this seems to be the type of market the "Yellow Sheet" best characterizes--the large volume market. The smaller (not necessarily small) packer usually adopts a somewhat different philosophy. A typical perspective is indicated in the following paraphrase of comments by a large beef slaughtering specialist in Iowa:

> The "Yellow Sheet" covers only part of the market for dressed beef. Prices for beef which is merchandised by the seller are typically higher than even the "top half" quote. The quote for "top half" carcasses reflects, at best, the market for commodity (non-merchandised) beef which is often sold in multiple carlot volumes. The lower part of the "general range" price quote often represents beef which is in some way undesirable--these transactions often being handled by brokers. . .I was asked by the "Yellow Sheet" to provide information. Each time they contacted me by phone, it was obvious that the prices I gave them were above what they intended using in the report. In fact, the price range in the report seldom "covered" the prices I was receiving just by meeting the specified needs of my customers. After about two months, the "Yellow Sheet" personnel quit calling us at all.

Another Iowa packer indicated that only the sale of undesirable beef which he could not sell to regular customers, and which moved

through a broker, was reported to the "Yellow Sheet". The broker provided information to the "Yellow Sheet"; the packer did not. National packers join in the concern over "Yellow Sheet" emphasis on brokers as a source of information. Most agree brokers handle a relatively large proportion of "undersirable" beef. There are days in which little beef is sold. A large proportion of the total volume on such days may be distress sales. Yet, because no volumes are reported, these transactions become "the market" for that day.[1]

Other packers reiterated these positions. In many instances, other points concerning the report were made. Instead of developing these points in detail, the important aspects will be briefly summarized as follows:

1. The "Yellow Sheet" is a report most characteristic of the national carlot market for dressed beef, centered in Chicago.
2. Price quotations in the report often do not accurately reflect prices for smaller volume sales, for sales of beef which have been effectively merchandised, or for sales in outlying markets some distance from Chicago.
3. The absence of any indication of volume in the report may lead to a situation in which relatively few sales or sales out of necessity are taken as indicative of

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[1]Provisioner officials have stated publicly that such sales are not incorporated into the report. Lester I. Norton, "Market Knowledge Via Daily Report Aids Entire Livestock-Meat Industry," The National Provisioner (January 18, 1964). However, it is difficult to see how the conditions of sale could always be known. Perception of packers who have been active in the market for years, who provide information to the "Yellow Sheet", and who have seen such apparent shortcomings of the report is not easily discounted.

the underlying forces of supply and demand. This may not be the case, but such a report may exert influence on price and/or overall trade the following day.

4. Quoted price ranges often excessively broad because of the considerable differences in value of carcasses within the reported grade.
5. The quoted price by weight and grade groupings becomes an "average" price for the grade and decreases the ability of the system to reflect the value of the more valuable carcasses and/or levy adequate discounts on the less valuable ones (in the form of price).

From these observations emerge quite logical reasons for many of the "paradoxical" situations which arise at various points throughout the system. Producers are perplexed when they see the packer buyer pay more for the live animal (on a cost of the dressed carcass basis) than the quoted price for such carcasses in the "Yellow Sheet". In markets distant to Chicago, the animal is worth more than the "Yellow Sheet" quotation. If the packer is not selling in the national carlot market, tends to deal in small volume sales, and is seeking to meet the needs of a local customer, the "Yellow Sheet" may not be representative of the market the packer faces. Yet, the packer is prone to use the "Yellow Sheet", especially when the wholesale market is low and/or the supply of live animals is heavy, in an effort to buy cattle at a lower price. Producers then adopt the position that the "Yellow Sheet" is a tool of the packer, a means of forcing down the price for the live animal. At another level,

the retailer tends to point to a low market, as indicated by the "Yellow Sheet", in trying to buy from the packer at a lower price--and so it goes.

Thus, the "Yellow Sheet" does not seem to be free of communication problems. Not all are of its own making, however. Insofar as the report is not representative of the national carlot market because of the methods employed in gathering information or because of disproportionate reliance on any one market channel (such as the broker), reason for concern arises. Other problems emerge because the report is used in situations where it simply is not appropriate. It is used for purposes of convenience and often, because no alternative is available. The report has not proven capable of providing the type of communicative activity needed to enable the marketing system to accurately reflect quality differentials in the form of price. The tendency of the report to perpetuate an "average" price for all Choice carcasses, for example, becomes a problem to the packer seeking to effectively merchandise Choice carcasses with desirable characteristics and/or carcasses in less than carlot volume.

The USDA report is relatively new, is not used as widely, and has been the recipient of less consideration by packers and other trade personnel. This report must also rely on contacts with trade participants for information on transactions. No volumes are reported. Consequently, USDA activities face some of the same hazards which seem to surround the "Yellow Sheet". Attempts to cover more of the trading centers should mean availability of a report more nearly representative of that particular segment of the (national) market. Reporting

trade in less than carload quantities facilitates the exchange process for these smaller volumes. However, the problems relating to quality variations within grade remain. Tendency toward activity on the basis of an "average" price by grades reduces the likelihood of prices ranging over the entire range of carcass value. A moment's reflection suggests this becomes a bottleneck to attempts to effect coordination vertically through the system. Absence of price differentials relating to value-related variations in carcass characteristics means absence of the motivation to produce the animal which will provide a carcass with desirable characteristics. Paradoxically, this is implying more price variation within grade is needed. Of course, any bad connotations arising from "price variability" would disappear, along with the variability, if the value-related attributes were identified and priced.

Having examined briefly the procedure of the two services, consideration is due the content of the reports. Do they meet the needs of those active in the wholesale beef market?

Packers agree on the two basic sources of uncertainty confronting their operation--variability in the available supply of live animals and variable conditions in the wholesale market. To bring some degree of order to the wholesale market, the packer needs indications of the effective supply and demand forces at work in the market. The reports supply neither. In addition to indications of price and general comments concerning the strength of demand and the nature of supply, the packer needs more specific information. What proportion of the buyers were actively bidding in the reported session and what proportion of the sellers were active--such information would be useful.

Too, what was the breakdown among active buyers. If retail chains bought heavily, the packer might feel the need to investigate the possibilities through other outlets more thoroughly. Information on the breakdown of sellers who were active (by size, degree of specialization, etc.) would permit the packer to better judge the competition he might face in the upcoming session. Needless to say, buyers could use such information. The better informed the buyer or seller, the more likely they are to move in and out of the market in a manner to promote price stability. Without such information, the packer must form his expectations concerning forthcoming supply and demand situations largely on the basis of output from his own informal informational system.[1] This requires estimates of product flows, cooler inventories, and attempts to relate federally inspected slaughter to the supply of dressed meat on a lagged basis.

Further comment on the need for product specification would be largely redundant. It should not be forgotten that the packer sells according to a rather detailed set of specifications and must try to buy accordingly. Yet, the wholesale reports are in terms of federal grades, weight ranges, and price ranges which are seen to go as high as $7.00 per hundredweight.[2] As has been seen at other points, ability to effectively use such reports is predicated on detailed understanding of the market and the relation between price and product characteristics.

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[1]In viewing such needs, it should be recalled that most packers can count on regular customers for high percentages of their output. The need then becomes one of coordinating movement of the product in a manner reducing variability and uncertainty to both parties.

[2]The USDA report from which the excerpts were taken reports a price range of $77.00-$84.00 for trimmed full loins from 600-700 lb. Prime steer carcasses.

Two Price-Related Problems

Consideration will be given two developments which have received much attention by those interested in the marketing of beef cattle and dressed beef. One concerns the possible effect of declining volumes in the terminal markets on the price structure for live cattle. The second concerns the impact of increasing formula pricing, based largely on the "Yellow Sheet", in the wholesale market for beef. Remarks concerning these two phenomena might best be viewed as hypotheses concerning their impact on the beef marketing system. Though the development is considered logical and sound, this should not be taken as indication more refined appraisal would not be useful.

There are two basic dimensions to the "problem" in the live animal market. First, there is concern over the impact of basing price negotiations on a price quotation from a market of declining relative importance. Second, there is the matter of quality as it appears the higher quality cattle are more likely to be sold direct.

Direct sales of beef cattle are increasing. Price must be bargained and some basis must be used. From interaction with producers, it is apparent the terminal quotation is widely employed as such a basis. But the price evolving on the terminal is the result of negotiations and bargaining of often fewer buyers and sellers as volume declines. The question is then whether the overall price level is lowered.

Because there is no one price-making point, the division of sales between terminal and direct cannot, in and of itself, cause a decrease

in price. Throughout any one production area there are forces of supply and demand in operation. Operating requirements of packers largely constitute demand and the level of production in the area constitutes supply. Packers will seek to meet their requirements and few are seen to rely on either direct or terminal purchases as the sole source of supply. One Iowa packer, who typically buys most of his cattle direct, remarked that the only time he went to the terminal to buy was when the terminal had an abnormally heavy supply of cattle--and this is precisely the time his buying influence is needed the most.

But what happens if buyers quit patronizing the terminal and the terminal supply decreases very little--will not the price be reduced? The answer to this is that the buyers will not stay away from the terminal with such a distribution of supply. To meet their needs, they would have to bid up the price of cattle being moved direct.[1] Before they will do this, they will buy in the terminal. There is considerable reason to believe this capacity and willingness to shift to the situation in which the supply appears more favorable to the packer reduces the price variability on the terminal relative to what would be experienced if such flexibility in buying power were not possible. There is no reason to suggest the price level will be lowered because the volume on the terminal declines. This would occur only in the unlikely event the packer lacked mobility to buy where conditions appear most advantageous.

There are indications of quality differences between the cattle sold direct and those sold through terminals. In particular, producers

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[1] This assumes the producer has no difficulty in receiving several appraisals and bids on his cattle while in the feedlot. That he can was solidly confirmed in all the interviews.

tend to sell uniform lots of cattle direct. Less uniform or small lots might go to the terminal. Too, those producers who rely on the reputation of their cattle in maintaining favorable relations with a packer may sell the lower quality animals through the terminal.[1] If the Choice cattle on the terminal will dress 60 percent and yield relatively low-value carcasses, the Choice cattle moving direct which will dress 65 percent and yield a valuable carcass are worth more than the terminal cattle. If the terminal report considers grade and weight with no attention to yield, a distorted price pattern might result. However, reporters try to consider yield, etc. Even if their efforts are insufficient, any price distortion which might result is squarely attributable to the inadequacies of product specification and related, lack of precision in reporting, not the fact that cattle are being sold direct. Similar comments would be in order concerning weighing conditions.

It appears that concern over the changing means of sale and assembly are merited, if at all, because of inadequacies in the available means of product (animal) specification. Given an adequate description base, any value differentials for the animal moving direct would be noted. This, plus lack of understanding with regard to conditions of exchange, are the relevant areas of concern. Volume becomes important only as an indicator of the importance of the distortions arising from these other sources.

The "problem" in the wholesale market seems to emerge wholly

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[1] A large Iowa feeder indicated he sold only about 5 percent of his cattle through the terminal. This 5 percent were those cattle he called "foolers"--i.e., cattle which had been on grain for only 60 days but appeared to have been grain-fed for a longer period. At times, he had spread such cattle throughout the terminal with different commission firms and sold several groups under different names.

from informational considerations. Viewed in a straight supply-demand framework, it would appear that "formula pricing", which would remove part of the supply and part of the demand from direct negotiation, would leave the operation of supply and demand undisturbed for the remaining volume. However, this ignores the impact on the informational base of the buyer and seller who negotiate transactions. The framework within which negotiations are completed changes. Assume the price for a specified product is trending downward. If packers who are negotiating sales in time period t feel this trend should be arrested due to decreases in available supplies, their efforts are affected by the movement of product to buyers which was negotiated in period t-1 for delivery at the "Yellow Sheet" price in period t. If all sellers were negotiating in period t, the trend in price might be arrested sooner and consequently, be of less magnitude. Therefore, the negotiating buyer and seller must attempt to estimate the flow of product via price formula as well. It appears the ability of the system to respond to changing forces of demand and supply is decreased. The amplitude of short run fluctuations around the longer run trend in prices will be greater because not all exchanges are negotiated during the period when a change in price should be halted or reversed.

Greater short-run price fluctuations might then be one result of formula pricing. However, the typical concern is whether the overall price level will be lowered because fewer transactions are being negotiated. Any such tendency is offset by the demands of retailers for beef in relation to the capacity of packers to meet those needs. These are still the forces which provide direction to price over time. Their long-run impact will not be lessened by the manner in which the

product is priced. Any impact on the overall price level for dressed beef must come from another source.

Attention was given the need for the "Yellow Sheet" to quote a representative price--a price not based on a few distress or atypical sales. One way to avoid this is to spread the contacts throughout the market. However, as formula pricing becomes more prevalent, the number of contacts and/or the volume of product subjected to negotiation must diminish. If this leads to even more emphasis on the broker or agent who seldom employs formula pricing, the price quotations which result may be even less representative of basic market conditions. This could have impact on the price level over time. Even if such a situation were to develop, formula pricing would be the causal factor only in an indirect manner. Effective reporting procedures might well remove any possibility of such impacts on price.

Evaluation of the Supplementary Services

Based on the developments of this chapter, those aspects of market news activities which affect their level of proficiency as systems of communication are briefly summarized. Concerning the USDA activity in the live animal market, the following inferences are in order:

1. A slight modification of procedure, with a change in emphasis, would strengthen the contribution of USDA reporting activities in promoting informed exchange activity in the live cattle market. Responsibility for recognizing the needs of receivers and the authority to enact adjustments rests primarily with service administra-

tors. However, currently employed procedural guidelines establish a role for the reporter which neither motivates nor requires interaction with receivers concerning their needs and means by which they might best be met. Emphasis is placed on increased dissemination, but more information or more complete coverage does not necessarily mean a better informed receiver. The needs of receivers of information and the type of report and means of dissemination which might best meet those needs deserve more attention. The task of understanding and serving the needs of receivers is more difficult because the role of the reporter is not viewed as including efforts to isolate and clarify the needs of receivers, and thus provide the feedback necessary for adjustments in procedure and/or perspective.

2. From this environment has come a view of receivers which is overly restrictive. The reporters view the producer as first in importance. However, there is indication of a lack of perception of the interrelated nature of all activities in the live animal market. If the perspective of a system of action is correct, all facets of the system must develop together if development is the goal.
3. There are indications reporters' ability to construct and disseminate a message free of ambiguity is restricted by demands of the mass media. This, combined with a tendency to rely on established procedure and/or simply report the

facts at the expense of efforts to understand the receivers' needs, suggests the receiver may not be receiving the optimal message or being reached through the optimal channel.

4. In spite of considerable emphasis on standardized procedure, reporters tend to vary in many important respects. There is little consensus as to how the atypical lot of cattle is handled. Variability in interpretation of day-to-day market changes suggests reporters vary in what they mean when identical terms are employed. The variation between reporters and their receivers (in interpretation of the terms) is unknown.
5. Some reporters are concerned with the prestige awarded them by others in the marketing system. This seemed to foster overemphasis on established guidelines as a mode of operation. In a longer run, this perception could have an effect on the enthusiasm and initiative of reporters.

Overall, the structure and operation of the service shows little indication of understanding concerning the basic requirements of effective communication processes.

Concerning operations at the wholesale level, the following inferences are in order:

1. Both the USDA report and the "Yellow Sheet" lack basic information on supply,,demand, and trends in each, information needed by the decision maker.

2. There are many indications that the "Yellow Sheet" does not, perhaps cannot, characterize the complete market for dressed beef. In particular, transactions in small volumes and/or effective merchandising of beef are often made more difficult because of the "Yellow Sheet's" limitations in reporting exchange activity for different qualities and quantities of product.
3. Both reports lack needed specification in product description. Price ranges vary widely, and the tendency to perpetuate an "average" price by grades compounds the problems faced by price as director and coordinator of activity. The value-related attributes which lead to price variability within grade are not, because they are not effectively identified, effectively priced.
4. Both reports may not be representative of the market unless care is exercised in selecting the participants from whom information is obtained. The quality of product appears to vary among channels or outlets for the product.
5. USDA quotes on less than carload basis and widespread points of reporting help insure their reports will be representative and facilitate the exchange process.

CHAPTER VI

SUMMARY, EVALUATION, RECOMMENDATIONS

Establishing a basis for viewing the beef marketing system as a system of communication also provides criteria for evaluation. Such an evaluation has been conducted, with appropriate conclusions being drawn in Chapters IV and V. However, the content of these two chapters differ markedly in level of generality. In this chapter, an overall evaluation will be conducted. Content will also include a brief summary and recommendations which appear logically sound.

Summary

This study was prompted by a perceived relation between availability of information and observed performance of the beef marketing system. The need for relevant information in effective decision processes is well established in the literature. Considerable attention has been given the performance of the beef marketing system. The relation between the availability and nature of information and system performance is not so well known and has received less attention. Efforts to establish the nature and likely implications of any such relationships became the central theme of the appraisal. More specifically, and in terms of an overall objective, the appraisal constitutes an attempt to isolate shortcomings in the information system in beef marketing and, where possible, to suggest the relationship between those shortcomings and the observed performance of the beef marketing system.

There is no established procedure for such an appraisal. Consequently, attempts to establish a method which would provide a meaningful basis for evaluation became an important part of the total effort.

Important advances have been made in recent years toward understanding the nature and operation of communication processes within a social or behavioral setting. An organized body of theoretical concepts has been developed, and many of the requirements of effective communication have been empirically verified. Upon examination, these developments appeared to provide the beginnings of a basis for evaluation, but the extent of relevance needed to be established. To employ such a basis for purposes of evaluation would be inappropriate if the activities of the beef marketing system are not affected, even guided, by the operation of an identifiable system of communication.

Chapter II begins the needed development with a description of past and present activities in the marketing of beef. The marketing of beef is viewed as a system of action. Interrelations and interactions are stressed. Emphasis is placed on developing understanding of why and how the system acts as it does. Important attributes of an unstructured system of action (as presented in Chapter I) are revealed. As is true of a system, change in one phase of the overall span of activity either follows or prompts changes in other and related phases. Current developments in the marketing of beef illustrate this point. Consumption has increased markedly over the last decade. Production, as the mirror image of consumption, has increased. Production increases have come through increased numbers of animals kept for beef, improved feeding efficiency, emphasis on the production of fed beef, and a trend

toward production in large, commercialized feedlots. Increased decentralization of the meat packing industry and movement of packing facilities into the production areas have paralleled such changes in production. Direct movement of the slaughter animal to packers is becoming more common and organized assembly facilities are being bypassed.

As volume has increased, retailers have adjusted to changing conditions. Self-service meat displays are commonplace. The retailer is moving toward centralized distribution centers to decrease costs of procurement and permit planned movement to the retail outlet.

All these changes have been and are interrelated. Such interrelations provide the general framework for viewing the marketing of beef as a system of action.

Having provided support for a view of beef marketing as a system of action, an examination of the communication process becomes the topic of Chapter III. Several models of the communication process are reviewed and a model developed which appears to provide descriptive and conceptual completeness.

Fundamental participants to communication processes are the source or originator of a message, the receiver or recipient of the message, and a channel or means of transmitting the message from source to receiver. Any and all of the roles may be interchanged, given the passage of time or a change in contextual relations.

The requisites of effective communication are many and varied. One of the most basic is that the source understand the needs and capabilities of the receiver. This requires efforts to align perceptions with those of the receiver. Feedback from the receiver facilitates

adjustment by the source. To help insure the needs are met when recognized, a channel should be chosen and a message constructed (encoded) which are matched to the decoding and interpretative abilities of the receiver. Any impact of, or on, the operating environment must be taken into consideration.

The social setting within which communication processes are conducted always affects the nature of such processes. Because the social setting is always changing, the communication system must not be static. Reappraisal and constant awareness of change must become a procedural guideline for the successful source. Whatever the setting, the source must be aware that unique meaning is not inherent in the symbols he conveys, that meaning depends upon interpretation by the users of those symbols. The basic purpose of most attempts to communicate is the stimulation of a desired response and similarity of meaning is essential if this purpose is to be fulfilled.

In Chapter IV, the marketing of beef is viewed as a system of communication. Technical interrelations, in the form of input-output relations, prevail throughout the system. These interrelations provide the framework within which the communication system operates and establish the need for communication between and among participants. The basic activities of production, processing (or packing), and retailing remain largely under the control of separate entities. Decision processes, based on long-run strategical guidelines and characterized by short-run tactical adjustments, provide the means by which the activities are coordinated and directed. Pricing becomes an integral part of negotiated transactions which convert the output of one participant to input for a second.

Price and pricing processes are not analogous to the communication system. The importance of price emerges primarily from its widespread use as a referent of the results of system activity. The nature and structure of the system are important determinants of the capacity of price to function as an effective coordinator and director of activity. These points become clear upon brief examination of decision processes and resultant system activities.

By arresting the process of activity, examination may be begun with the consumer. Consumers' criteria of choice are ill-defined and do not appear to be closely related to the federal grade standards. Whatever the criteria, consumers make a "yes-no" vote concerning the price-product combinations offered by retailers. Retailers evaluate the "votes" and convert the message so conveyed into a procurement program for dressed beef. Price is relative to products identified via refinement and increased specification related to federal grades. Bargaining in the wholesale market is employed to secure the product demanded by consumers, the product to be sold a few days later.

Packers evaluate the needs of retailers as expressed through activity in the wholesale market. Quantity-price combinations are negotiated and the packer attempts to align purchases with sales potential. A decrease in specificity emerges as the packer bargains for the live animal. Most transactions are on a liveweight basis, requiring estimates of grade, yield, and other value-related characteristics. The packer buys from the producer a raw material (the live animal) which will be sold as dressed beef up to two or three weeks later. The producer, in turn, evaluates the message conveyed by price from periodic activity in the market and makes production plans. Lags

in adjustment to changes at the consumer level occur as a result of the biological nature of production and any uncertainty confronting the producer as he attempts to interpret the message conveyed by price and apply it in operation.

The lack of an adequate descriptive terminology based upon value-related characteristics of the product contributes ambiguity to price. Federal grades are not always used and are subject to heterogeneous refinements. Other characteristics of the system are also important. Observed price is not always an accurate reflector of exchange processes when the conditions of exchange are variable or unknown. The heterogeneous nature of the product requires valuation of any economically significant characteristics which contribute to the heterogeneity. Decisions are made on the basis of expectations of future conditions, requiring imprecise price projections and estimates. Price may not be determinate when bargaining at low levels of aggregation involves inadequate and unequal information or imbalance of bargaining power. Such price-related phenomena, either singly or jointly, may result in price conveying the wrong message--a message not conducive to overall coordination and orderly activity.

These price-related problems are compounded by an organizational structure which resists change. Vested interests in maintaining a certain structure often prevail, emerging from the desire to protect investments which would lose economical significance in a changed or changing organizational structure. Perception is often too restricted to permit recognition of the activities as a system. Conflicting pressures emerge from inadequate perceptions of role within the overall system.

Market news activities are conducted for the expressed purpose of providing more adequate information to system participants. Chapter V examines the level of attainment of these activities as effective communication systems within, and contributors to, the total span of activity. Major public activities are those of the USDA (Federal-State Market News Service). The most important private market news participant is The National Provisioner, Inc., providing the Daily Market and News Service (The Yellow Sheet).

USDA activity in the live cattle market emphasizes the reporting of price, price trends, and price-related information. A questionnaire designed to provide insight concerning reporters' operations was sent to the 27 market news offices considered important in reporting exchange activity for fed beef (see Appendix I). Replies were received from 20 of the reporters and examined in search of possible ways to improve the service as a system of communication and contributor to marketing activities.

Appraisal of the results established a basis for suggesting that the contributions made by USDA market news services might be increased with a reorientation of emphasis and a slight change in perspective. To facilitate needed standardization of procedure, the responsibility for recognizing the needs of receivers and the authority to enact most adjustments are retained by service administrators. This organizational structure appears to have established a role for reporters which does not emphasize efforts to develop detailed understanding of the needs of receivers. Consequently, the reporter has not become an effective means of feedback from receivers to service administrators. The task of developing and maintaining alignment between service activities and the

needs of receivers may be more difficult as a result. Not unrelated are the reporters' feelings that the producer is the most important receiver and user of market news information. If viewing all market activities as a system of action is relevant, any one system participant can best be served by providing relevant information to those participants providing related services or engaging in related activities. This perspective is missing among reporters.

Other potentially important guidelines to service activity emerged from appraisal of the completed questionnaires. In spite of emphasis on standardization of procedure, reporters are seen to vary in the way they handle atypical lots of cattle. Some incorporate such cattle in their reports; others do not. Too, there is reason to suggest reporters may be referring to different market trends when using the same or similar terminology to describe one market session relative to another.

The importance of the operational environment to the activities and potential success of the reporter as a source is evident. The ability of reporters to employ "redundancy"[1] in constructing reports is restricted by mass media demands for a short report. Reporters pay considerable attention to such demands, even though the mass media are conveyors, not receivers, of the information.

Much of the potential for improvement could apparently be economically realized by a slight change in perspective which (1) expands or alters the role of the reporter to include more emphasis on developing understanding of the needs of receivers and conveying such to service

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[1]In the simplest of terms, redundancy refers to repetition, reiteration, or expanded message construction in an effort to insure the receiver's interpretation of terms and symbols is analagous to that intended by the reporter as source. See Chapter III, especially pages 131 - 32.

administrators, and (2) more emphasis on establishing the relevance of disseminated information to decision processes of receivers prior to emphasis on increasing the amount of information or number of reports being disseminated.

Possible deficiencies are noted in reporting activities in the wholesale market. Neither the USDA wholesale report nor the National Provisioner's "Yellow Sheet" give indications of the absolute volume of trade. Like the USDA reports in the live animal market, grades are important components of the wholesale meat reports. The errors of estimating grade are largely eliminated. However, the federal grades lack the level of precision which is apparently considered necessary. In the wholesale market, increased specification is almost always employed. Price reports in terms of the federal grades may tend to perpetuate an "average" price for the grade and limit the range of dispersion around this average, even though dispersion may be merited by variations in quality.

The "Yellow Sheet" is centered in Chicago and is considered most representative of the national carlot market for beef. Its relevancy as a basis for pricing smaller volumes or for transactions in trade areas distant to Chicago is questioned by many trade participants. Some packers feel it is not representative of even the national carlot market, suggesting disproportionate reliance on brokers as a source of information may decrease the reported price level relative to the price at which the bulk of beef is traded. Brokers tend to handle a relatively high proportion of less desirable beef. Effectively merchandised beef often moves at prices above the "Yellow Sheet" reported range.

The USDA report is less widely used. More emphasis is given the smaller volume transactions and attempts are made to provide information on most important trading centers. The extent to which the information employed in constructing the report is representative of the market has received less attention by trade personnel, but should be considered by directors of the activity.

Evaluations and Recommendations

Needed: A Broader Perspective

One of the most important barriers to coordinated and orderly activity in beef marketing is that of narrow and restrictive perspectives on the part of system participants. Being abstract in nature, this attribute has been largely unrecognized. Berlo discusses the reciprocal relationship between communication and social systems.[1] He suggests social systems are produced through communication, that once a social system has developed, it determines the communication of its members. A social system is scarcely a tangible entity. Its existence may rest on the presence of technical interrelations, but the operational dimensions of the system depend largely on the perspectives of participants. The importance of this emerges through participant activity which is not aligned with the needs of the system as a whole, and thus denies the potential of coordinated effort which is often beneficial to each and all participants. Also, a limited perspective by researchers leads to evaluations which do not take sufficient account of the relation between and among the various levels of activity. The

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[1]See Chapter III, pp. 103-04.

limitations also extend to service activities such as market news, placing restrictions on the realm of activity considered deserving of coverage and limiting understanding of the needs of system participants.

Many examples could be given which would be indicative of the implications of a narrow perspective by system participants. One involves producers' perception of the implications of price variability in the live cattle market. Producers feel they have to be gamblers. Consequently, they do not object to the packers' having to "bid up" the price of a light supply of cattle to fulfill operating requirements. They like such a "high" market, even though they admit losing money on some lots of cattle when the price is not so favorable. There is little indication producers feel their position would be improved with increased stability in the live cattle market. Yet, considering the costs to packers of such variability and the nature of the competition among packers for live cattle, there is reason to believe that producer returns would improve with increased stability. Perhaps more importantly, price variability tends to block the efforts of the system to direct producer activity into alignment with the needs of consumers. Producers' perspective of their operating environment seldom includes the implications of the lags in adjustment caused by price variability, nor is the need for alignment with consumer needs given a great deal of importance. The perspective seldom goes beyond production activities and the live cattle market.

Of course, limited perspectives should not be divorced from more specific attributes of the system as possible causal factors. The packing segment could be charged with overly restrictive outlooks in their rejection of dual grading, theoretically a valuable innovation.

However, packers were concerned with their ability to extend price discounts for carcasses grading 4 or 5 on the cutability scale into the live cattle market through their procurement activities. They were and are aware of the need for estimating grade and consequent errors in buying cattle on a liveweight basis, even if the dual grading concept were extended into exchange processes for live cattle.

This indicates another important point. A limited perspective by researchers who develop and offer innovations may decrease the likelihood of developments which will be accepted by the system. Most proposed changes or innovations rely at least partially on theoretical rationale and support of their relevance. In such theoretical developments, the implications of the change throughout the system must be considered. Failure to adopt an overall or system perspective leads to proposals which are situation oriented, directed toward "improving" the system at some one level of activity. Due to the interrelated nature of the various activities, impediments to acceptance of change are almost sure to arise at other levels in the system unless attempts to foresee all possible implications are successful and the proposed change adjusted accordingly. Failure to recognize and account for such broad-reaching implications has resulted in castigation of "ivory tower" research by many system participants. Similar comments extend to service activities such as market news. It would appear that an important role of market news would be to contribute to the total communication system by fostering breadth and scope in perspective among information users. If the service itself is operated from a limited perspective, this can scarcely be achieved. In addition, there is little assurance that the

information being disseminated is aligned with the needs of receivers who must operate as part of a system.

The importance of this cannot be overstated. An implicit objective of the appraisal, but one which permeates the entire undertaking, is to reveal the importance of a more discerning perception of marketing as an interrelated system of action. As more specific topics are discussed, whether they are research needs or suggested changes in service activities, this should be borne in mind.

Implications of Certain System Attributes

Inadequate means of product description constitutes one of the more serious shortcomings of the system. In an overall sense, it might be suggested that lack of precision in description contributes ambiguity to any message of which the current grade standards are a part. However, the implications of this particular inadequacy are revealed by several other operational characteristics of the system. The importance of the shortcoming is best indicated by discussion of these related attributes.

First in importance is the impact of the inadequacy in product description and classification on the ability of the system to effect coordinated activity. There are vertical and horizontal dimensions to this problem, and they are related to the time and product heterogeneity attributes of the system respectively.

In the vertical or time dimension, the challenge to the system is to convey proper incentives back to the producer. The capacity to do so is threatened by the poor relation between federal grade standards and consumer's criteria of choice, the retailer's non-standardized

refinement, and the limited ability of the packer to price the live animal in accordance with value-related characteristics as specified by the retailer. The "message" from the consumer may be lost or distorted by the time it reaches the producer. The still variable attribute of product description becomes a noise-making force as pricing processes are employed to convey directives for action through the system. Proper adjustment along the time dimension by the producer becomes highly unlikely.

Horizontal coordination, meaning coordination between and among participants at any one level of activity, is precluded by the inability of the grade standards to classify the value-related characteristics which renders the product heterogenous in nature. Effective meeting and relating of differentiated demands is made more difficult. In combination with the vertical dimension, descriptive inadequacy leads to difficulties in promoting the desired type of production. The characteristics considered important at retail cannot be adequately valued by pricing processes when they are not adequately identified and described. Any descriptive completeness which is attained in the wholesale market via increased specification is missing in the live cattle market when the cattle are bought via liveweight and grade. The end result is perpetuation of an "average" price by grades, with price differentials which indicate variations in quality seldom reaching the magnitude or the stability which appears necessary to incite effective production adjustment.

Many other attributes of the system contribute to barriers to effective communication and, insofar as they are positively related, coordination of activity. When all are considered, there is grave

concern over the capacity of price and pricing processes to effect coordination in such an environment.

Variable conditions of exchange become a problem which is often related to grading and product description. Price may be biased as a message or incentive for action when uncertainty or lack of knowledge concerning weighing or grading conditions prevails. Precise product description and equal knowledge of the conditions of exchange become two basic requisites if price is to be an effective coordinator. The necessity of estimating the forces of supply and demand or unequal bargaining strength may render price indeterminate. However, these two forces are more nearly results of the structural organization of the livestock industry and are not easily controlled. There seems to be considerably more possibility of reducing the uncertainty arising from inadequate product description and variable conditions of exchange.

Within such a system, price variability is to be expected. Variability is both a cause and an effect. The causal dimension emerges in the form of speculative activity and the problem of identification.

A fluctuating price conceals the inherent message concerning needed change--if there is one. Time is employed in deciphering or decoding a message, reaching a decision as to the desirable response, and beginning appropriate action. Because variability conceals the message, the decision maker may view the deviation between actual and desired performance as relatively large and deserving of immediate remedial action, once the message is recognized. The perception of the message is subject to error. Even if correct, the tendency is to over-respond, to evolve a situation in which speculation has increased

rather than decreased price fluctuations.[1] This may occur in the short run with selling decisions and, more likely, in the longer run as a contributor to cyclical fluctuations.

Variability complicates the identification problem. The typical problem is one of identifying the causal factor in price change. A change in supply or demand may be the cause. The incorrect decision as to which is the causal factor may lead to action contrary to that needed in promoting stability in pricing.

The immediate needs in this area are not simply the suggestions of new procedures, changes in the system, etc. What is immediately needed, perhaps in conjunction with proposed changes, are indications of the costs of the present system. A receptive atmosphere must be cultivated first. Suggested "improvements" are otherwise sterile and largely hopeless.

Abstracting from, but not forgetting, the problem of appropriate procedure, the following are suggested as areas in need of more thorough investigation:

1. The criteria which consumers employ in choosing among cuts of beef. Value is established at this point, but there is at present no concensus as to the product characteristics considered most important by consumers. This is further complicated by limited understanding concerning the different demands for beef among consumers.

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[1]This is true so long as the individual responds with little or no attention to the implications of other producers' reactions which would typically be in the same direction if not in the same magnitude due to differing interpretations of the "message."

2. The extent of variability in the value of carcasses at retail. In particular, information is needed on the distribution of such values both within and across the currently used federal grade standards. This would provide indications of the costs of the present tendency toward an "average" price by grades and develop support for a more refined means of reporting wholesale trade activity. Estimates of the benefits of more refined grading procedures might then be developed for purposes of comparison with the increased costs of any proposed changes in the current grading procedures.
3. The nature of the relationship between the (dressed) cost of the animal to the packer and the value of the related carcass at retail. Theoretically, the two "distributions" should be identical except for a "shift parameter" which would be the packer's margin. A priori, this appears to be one of the most significant bottlenecks in the present system as a system of communication. There appears to be only a very weak and uncertain relation between the cost of the carcass to the packer and the retail value of the carcass.
4. The extent and direction of errors by packers, market news reporters, and producers in estimating live animal grade. Coupled with available indications of error, such information is needed to establish the opportunity cost of not using alternative methods of marketing not subject to such errors.
5. The possibilities of specifying the conditions of exchange in direct sales in a manner acceptable to both buyer and seller. Some form of contractual arrangement and a means of supervision

would be required, and this should be related to the next area of investigation.

6. What is the role (if any) of the commission firm in a market structure where most sales are direct. Information is needed on (a) the contribution the commission firm might make as an intermediary between producers and packers in negotiating exchange, and (b) the relative acceptability of the commission firm as the party which might supervise completion of contracted exchange procedures. This is offered as a possible role for the commission firm, one which would perpetuate its economic viability and make a positive contribution. Of course, the reaction of the commission firms to such a proposal is also needed.

Notice that these suggestions would provide information on the costs of inadequate product description. It would be naive to suggest that once these costs are aired, widespread receptiveness will sweep through the system. Cost estimates would be subjective in nature. Not all the relations in the system are identified as yet. They would need to be quantified for explicit estimates of cost. However, it is contended that such investigations as these, interpreted in terms of implications or possible implications throughout the system, would begin development of a more receptive attitude. Not to be overlooked is the potential contribution to the broader perspective which is sorely needed, both by system participants and by those external to the system who would appraise system performance. With a solid perspective established and understanding improved, an improved means of product description could (and assuredly will) be developed and offered.

Whether any proposed change would then be accepted would depend on the decisions of system participants. There are always costs to change, costs other than those accruing from changes in the public grading activities. In addition to any out-of-pocket costs, system participants would incur "costs" in disrupting trade relations based on current terminology. What has become a fixed investment in establishing relations with customers and suppliers would become a variable cost if change were contemplated, at least in the short run. These costs are typically recognized, but possible benefits from any proposed change are less well recognized. Possible benefits will not be appreciated, will not be recognized, if the adopted perspective is void of any recognition of the interrelations which make of all the various activities a system of action.

The Role of Market News

Recommendations concerning market news activities should be placed in proper perspective. In particular, they should not be viewed as castigation of current activities. As in typically the case, any changes which might be suggested should be subjected to careful investigation concerning their economic practicability. In the case of USDA activities, political feasibility may also become a relevant consideration. The scope of this study has not permitted such detailed investigations. Recommendations will be based largely upon isolated deficiencies in the market news activities as systems of communication. Conclusions concerning the feasibility of any remedial action must largely await more specific analyses and/or consideration of those directing the activities. The purpose here has been, and is, to identify

those areas which appear worthy of consideration and to support the development of a perspective which is not so limited as to overlook important implications of change, whether costs or benefits.

Particularly in the live cattle market, the USDA service appears to be somewhat static and rather slow to adapt. The role of the reporter is limited. Proficiency in grading, estimating market trends, etc., is a necessary but not sufficient requirement for effectiveness. What appears to be largely missing is proficiency as a communicator, as a source, in fulfilling the needs of various receivers. The perspective of the marketing system appears limited, provisions for feedback are weak, and too little concern for understanding and meeting the needs of receivers is shown. If the service were more proficient in these respects, more specific comments concerning shortcomings in procedure and output would be unnecessary.

A word of caution is in order before any more specific points are made. The relevance of disseminated messages can be judged in two ways. First, judgment by the intended receiver is valid (but not always highly informative, due to limited perspectives). The second valid appraisal is by an external observer who observes the behavior of receivers and on this basis, evaluates the relevance and effectiveness of the message. The second alternative is of course employed here. The extent to which the concern for a broader perspective of system activity affects such an appraisal is unknown. However, a case could be built to support appraisal from such a perspective as the most relevant one when the aim is to suggest means of improvement. Nevertheless, the distinction should be borne in mind.

Market reporting activity in the wholesale beef market exhibits two characteristics which are worthy of attention. The first is related to the extent to which the reports are representative of the market. In regard to this, the following recommendations are in order:

1. The reports should indicate the volume of trade. This would help offset any problems which might arise when a small volume of sales is reported in terms of price, grade, and weight, as "the market" for that session. Too, the possibility of the report placing too much emphasis on distress sales (when they comprise the bulk of a small-volume market) would be reduced.
2. If possible, the reports should categorize the reported volume by buyer and seller. The buyer might be categorized by retail chain, affiliated retailer, independent wholesaler (breaker or jobber), or broker. Sellers would include packers (including branch house sales), brokers, and wholesalers. Such a breakdown would assist the receiver of information in deciding on the type of product moving, helping to offset the possible problem of too much emphasis on exchange through brokers. In relation to this, efforts are needed to establish what, if any, difference in quality of product is involved when moved through a broker as opposed to other channels.

These indications of volume would help in developing estimates of supply and demand. Too, the breakdown of the volume would facilitate efforts to effectively move a product which, because of differences in characteristics, must be directed to different outlets.

The second characteristic concerns the use of federal grades as important characterizing values in the report. In a market where

increased specification is widespread, the reports of trading activity are in terms of the more "general" federal grades. The heterogeneous specifications and refinements which are actually used become a barrier to change, but the following possibilities should be investigated:

1. The possibility of instigating reporting procedures which employ classifications based on the product characteristics which take on value at retail but which are not incorporated by the federal grade standards. A change in reporting procedure would be required, perhaps a setup similar to that employed by the USDA in reporting direct sales in the live cattle market. This would mean indications of the classifications from those providing information in conjunction with the possibility of spot-checks to verify the reported information.
2. If such a classification cannot be set up, or until that time it is made operational, an attempt should be made to provide indications of the reasons for the often broad price ranges within grade for carcasses and primal cuts. Considering the discussion and publicity the dual grading proposal received, this might well provide a possible terminology which would minimize the initial barrier of ignorance. A reporting setup similar to that in 1. would be required.

It hardly requires mentioning that improved indicators of activity in the wholesale market would improve vertical coordination. Participants in the live cattle market are increasingly looking to the wholesale market as a guide to activity. The indicated changes, if feasible, would improve their ability to coordinate the two markets and move appropriate price incentives vertically through the system.

Suggestions concerning reporting activity in the live cattle market apply to USDA activity, the important disseminator of information at this level. The comments in Chapter V concerning perceived shortcomings as a communication system apply most directly here. The absence of attention concerning the needs and capabilities of receivers, combined with an apparent limited perspective of the marketing system, might be suggested as contributors to the situations which will now receive attention. Comments will be based on the results of the analysis of Chapter V and developed insight concerning the needs and decision processes of system participants, especially producers.

One of the important uncertainties facing producers is price variability. More specifically, the concern is with ability to predict price. Producers indicate an ability to predict price as they prepare to sell within 10 to 50 cents per hundredweight, which means a possible range of up to $1.00. However, most indicate ability to predict with even this type of accuracy is based on familiarity with the market. If the producer is "off" the market for several weeks, he then experiences difficulty in examining reports and formulating expected prices to such a degree of accuracy. Basic to such expectations is information on supply and demand. The news reports indicate volume on the particular market, 12-market receipts, and recently, increased attention is paid estimates of federally inspected slaughter. Any indications of demand must be gleaned from price and price trends, perhaps in conjunction with indications of the pace of trading activity. However, different paces of trading activity evolve in similar supply-demand situations, and vice versa. Considerable attention has been given reasons for price variability within grade other than changes in supply and demand.

Overall, the producer needs more specific information in evaluating supply and demand and, insofar as appropriate decisions will do so, contributing to more stable prices. In conjunction with these needs, the following suggestions are offered for consideration:

1. Develop and report supply (such as the number of head of fed beef) in relation to weekly operational requirements of packers who typically buy on the particular market or in the production area of concern. Though subject to variation, such an indication of supply would permit both producer and packer to better estimate the impact of various levels of supply on subsequent sessions. This could be broken to divisions, such as for fed beef, and reported in terms of a cumulative percentage index during the week. An index totaling 100 would indicate weekly operational requirements had been met.
2. Report a similar indication, by days, of the <u>active</u> buyer participation on the market. This would require establishing the buyer representation on the market in terms of an index, the "typical" representation being assigned the value 100. Reporters would be charged with the responsibility of ascertaining any unusual representation on the market (such as order buyers) and the extent to which buyers are active on the particular session. A value less than 100 would suggest low representation and/or poor buying activity at prevailing price levels and conversely for values greater than 100.

Such measures are at least partly subjective. However, if operational details were worked out, the "indices" would permit the reporter to

employ his knowledge of trade activity on the market and remove the need for complete familiarity on the part of buyer and seller in evaluating reports.

Until that time when more refined descriptive measures are available, and as a means of facilitating understanding and reception of such measures, the reports should incorporate more explanatory detail. In particular, the following are suggested as possibilities:

1. Indicate the reasons for price differentials. When differences in yield are obviously reasons for price differentials within grade, this should be indicated. Currently, these differentials in yield are considered to insure against bias in reporting a representative price range. However, the receiver of the message does not always realize this and may be unsure as to what caused a price differential and/or the size of the price range within grade. Indication should also be given of reasons for price differentials other than yield. An example would be atypical lots of cattle.
2. Related to 1., weighing conditions should be reported with related prices when such appears to be a causal factor in price differentials in direct sales.
3. Begin the incorporation of more refined descriptive standards into the reports. Because of the available familiarity, the dual grading standards appear most practicable. This would incorporate the cutability scale into the reports. When employed with price and as a means of explaining price differentials within the currently employed federal grade standards, vertical coordination would be bolstered. The use of this terminology

would provide an excellent opportunity to relate live cattle market activity (and price) to the needs of packers and retailers. Perspective and understanding would be promoted.

The preceding suggestions, if adopted, would often require a longer report. However, the appraisal of Chapter V has indicated pressures from the mass media for shorter reports. In particular, those demands were seen to limit reporters' efforts to reduce ambiguity by repeating, restructuring reports, employing more descriptive phrases, etc. This indicates the need for investigating alternative means of disseminating reports. One alternative which appears worthy of consideration is the use of the telephone, employing recorded messages by the reporters. A different number could be assigned reports for different species or even divisions within species (such as fed beef versus lower quality cattle).

Spanning all reporting activities is the problem of different meaning being attached to terminology employed in the reports. In Chapter V, it was revealed that reporters may attach different meaning to the same terms. If this is the case, then what of the possible variation in meaning among receivers and between reporters and receivers. This becomes even more important in conjunction with demands for brief reports which appear to dictate the use of such connotative terms as "strong," "moderately active," etc. Two possible approaches to investigation of this problem are as follows:

1. The market specification approach which was employed in the appraisal of Chapter V. Market conditions may be specified on a "first day-second day basis" and alternative "calls" of the change made available for selection. This would permit evaluation of reporters, receivers (such as a sample of producers),

and the differentials between the two groups. Yield and any other variables which might be brought into consideration should be stated in a manner to neutralize their possible impact.

2. A more elaborate procedure is provided by the "semantic differential," a procedure developed by students of communication.[1] Taking advantage of computer techniques, the procedure is one of isolating the nature and intensity of a person's reaction to a particular concept or term. Differences in meaning among persons is indicated by differences in the semantic differential, an index of the generalized distance between points established by individuals in a multi-dimension space of "meaning." The procedure would be unaffected by environmental surroundings of persons being tested.

If differences in meaning are widespread, the burden of improved similarity in interpretation of certain terms rests with the market news service. Redundancy in messages becomes important, as do attempts to eliminate unnecessary connotative terms.

Where the important concepts included in reports may be varied, as is typically the case, some means of measuring the value of the reports to decision makers is needed. The type of report currently being used obviously exhibits the information which the market news service considers important. Concern has been expressed over the absence of attempts to establish how important the messages are to receivers. Suggestions have been made which, it is felt, would more nearly correlate the reports to needs of receivers. However, procedure may be needed to

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[1]See Charles E. Osgood, George J. Suci, and Percy H. Tannenbaum, The Measurement of Meaning (Urbana: The University of Illinois Press, 1957).

provide indication of which of alternative messages would prove more useful to receivers. Ackoff offers one approach to this problem.[1] He constructs, in theoretical terms, a measure of the total value of communication. Basic components are (1) the probability an individual will choose a course of action, given a specified environment, (2) the probability of an outcome given the chosen course of action, and (3) the value of the outcome, a function of the preceding probabilities and a value rating of possible outcomes. According to Ackoff, changes in the three inform, instruct, and motivate respectively. All three determine total value; a change in any or all of the three changes total value of the communication.

A key to the usefulness of this conceptualization is the establishing of the probabilities. This would appear possible by presenting hypothetical decision situations, with indicated outcomes to receivers, and asking them to assign the needed probabilities concerning the likely outcomes and a value rating to each.

Such possibilities as these are briefly introduced as indicative of the types of tools the effective source might soon be using in efforts to increase the value of his efforts.

Overall, and of greatest importance, is the need for market news services to become more proficient as communication systems. This includes as a necessary prerequisite knowledge and understanding of communication processes. From such a base, the importance of feedback to provide information on receivers and guide adjustments by the source would be recognized, as would the importance of other indicated shortcomings.

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[1]Russell L. Ackoff, "Toward a Behavioral Theory of Communication," Management Science, Vol. IV (April, 1958).

With increased understanding of communication processes comes a broader perspective, increased recognition of the implications of activities which are joined into a system of action, and an improved understanding of what is required to be an effective source of information.

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APPENDIX I

Questionnaire Directed to Market News Reporters, Livestock Division, Consumer and Marketing Service, United States Department of Agriculture

Instructions: Please read, for each of the questions, the entire range of alternatives before marking the ones you consider most appropriate. When no alternative or combination of those presented appear appropriate and/or sufficient, you are encouraged to write in your own interpretation, approach, etc., in the spaces provided. (Complete sentences are not necessary--use phrases or whatever structuring suits your purpose.) When several alternatives are chosen, please list them in order of importance in the "combination" blank (even if you have marked the chosen alternatives individually) unless you have no opinion as to which are the most important. All information will be considered confidential. No identities of individuals or office locations will be revealed in the report derived from this survey.

I. Respondent Data

(1) Your name_____

(2) Location of office_____

(3) Age_____

(4) Years of formal education (e.g., use 12 years for a high school education)_____

(a) If a college graduate, what degree and what was your major?_____

(5) Number of years experience as a market news reporter_____

(6) (a) Number of years associated with the marketing of livestock_____

(b) Nature of association other than as a market news reporter_____

(7) What was your vocation immediately before you became a market news reporter?_____

(8) Your activities as a reporter are

☐ (a) Primarily based on activities in a terminal market.

☐ (b) Primarily based on activities on the range or direct trade.

☐ (c) Both terminal and range, ____% terminal and ____% range.

(9) Of total slaughter cattle receipts at your market, approximately what percent is fed beef? (Consider "fed beef" as slaughter steers and heifers grading Good or better.)
_____%

(10) Please be as objective as possible in marking those of the following statements which would best describe your view of your position as a market reporter.

☐ (a) An excellent way to learn the industry and perhaps open the door for advancement either as an industry participant or in a higher position in the activities (market news, grading, etc.) which service the industry.

☐ (b) A challenging position, one which I perceive as a long-term or career position.

☐ (c) The position is not given the prestige it deserves by the industry because it is often taken for granted, i.e., its importance is not clearly seen.

☐ (d) The position is given considerable prestige by the industry.

☐ (e) The nature of the position leads to pressures from both the buying and selling sectors and thus the reporter has no audience which clearly supports his activities.

☐ (f) The position of reporter is far more important than is typically recognized because reporting activities influence the decisions and behavior of many people.

☐ (g) Following combination of the above. (Please list in order of importance.)_____

☐ (h) Other comment about the position of reporter.____
_____

II. Market News Reporting--Method and Procedure

(1) In forming your price observations, you seek to report a representative price for the various weight and grade

combinations, e.g., for high Choice 1000-1150 pound slaughter steers. Mark all of the following statements which are consistent with your approach to deciding upon a representative price.

☐ (a) Choose several lots of cattle which seem to be the average or most typical of a certain grade and weight range and use the price which these lots bring as the characteristic value of a price range, the range being set to cover variability in observed sales around this value. In following this procedure, you ignore atypical lots (such as a lot of horned cattle or a lot with grubby hides) which may bring a different price. (It is recognized that what will be considered atypical is relative, varying with the season of the year, etc. Please accept the existence of legitimate "atypical" groups when such are referred to in the questions.)

☐ (b) Observe the price paid for several lots for a particular grade and weight range and since all lots are different to some degree, use the average price for the several lots of cattle as the characteristic value of a price range which covers the observed variation. Again, you ignore the atypical group of cattle as suggested in (a).

☐ (c) Same as (b) except you use the price most frequently observed instead of the average. The atypical lot is again ignored.

☐ (d) You observe four lots of "typical" high Choice 1000-1150 pound steers. The fifth lot you observe will grade high Choice and weigh 1000-1150 pounds, but is horned. This lot sells at a $ .50 per cwt. discount relative to the previous four. Assume one lot out of five which will grade high Choice and weigh 1000-1150 pounds will be discounted for reasons such as being horned, grubby hides, excessive fill, etc. on your particular market. You then lower the characteristic value about $ .10 per cwt. (one-fifth of the $ .50 differential) and build your range about this point.

☐ (e) Reflect the effect of the atypical lots by broadening the price range to include them. For example, the "typical" four-fifths of the high Choice, 1000-1150 pound steers fall in the $26.50-$27.25 per cwt. range. The atypical lots, comprising one-fifth of the market for the high Choice, 1000-1150 pound steer market, bring either $26.00 or $26.25 per cwt. You then report the price range for high Choice, 1000-1150 pound steers as $26.00-$27.25 per cwt.

☐ (f) Other approach to arriving at a "representative" price. Please specify._____

_____

(2) Based on your experience as a reporter, which of the following typically leads to a discount on particular lots of slaughter steers or heifers, grading Good or better, relative to the more nearly typical lot? (Place an "s" in front of the checked box for any condition which you feel would be atypical only during certain seasons of the year. An example might be muddy cattle in mid-summer when most cattle are <u>not</u> muddy.)

☐ (a) horned cattle

☐ (b) grubby hides

☐ (c) obvious bruise damage

☐ (d) small lots

☐ (e) muddy cattle

☐ (f) shipper reputation in the sense that a particular shipper's cattle consistently have more bruise damage, yield less, etc. than is evident on live inspection.

☐ (g) excessive fill prior to sell

☐ (h) consignor is not known by buyers

☐ (i) other_____

_____

(3) One of your functions is to describe the current market session relative to the preceding session in terms of price changes or trends for the various grade and weight groupings of slaughter steers and heifers (grading Good or better). Mark those of the following statements which best describes your approach.

☐ (a) Ask salesmen (seller) to describe changes in price relative to the previous market session and use this as the basic element in your decision process.

☐ (b) Ask buyers to describe changes in price relative to the previous market session and use this as the basic element in your decision process.

☐ (c) Select typical lots of cattle for a grade and weight combination, observe the price, and compare to the price quoted for that grade and weight range on the previous session. Note the apparent difference and use this as the indicator of price change.

☐ (d) Rely on both salesmen and buyers jointly for information to describe changes in price, especially the buyers and salesmen (seller) who have negotiated directly with each other in the sale of specific lots where this is possible.

☐ (e) Following combination of the above. List in order of importance._____

☐ (f) Other approach. Specify._____

_____

(4) Assume that you have described the pace of trading activity for slaughter steers and heifers, grading Good or better, as "slow" for some particular market session. Which of the following supply-demand situations would you consider consistent with such a description; i.e., which do you feel would tend to lead to a pace of trading activity considered as "slow" in your terminology? For present purposes, use the following definitions:

normal demand--buyers are active in the market, seeking to meet their needs to maintain operating levels. "Strong" and "weak" imply measurable tendencies to deviate from this normal demand.

normal supply--livestock are flowing to the market with no noticeable fluctuations from the typical pattern over time and in a quantity which would just meet typical operating needs for the packers and processors buying in the market. "Heavy" and "light" imply measurable tendencies to deviate from this normal supply.

The "surrounding markets" referred to are available to the buyers with the cost of moving live cattle to this immediate market area no greater than $ .50 per cwt.

☐ (a) weak demand in this and surrounding markets with supply heavy in this and the relevant surrounding markets.

☐ (b) strong demand in this and surrounding markets with supply heavy in this and surrounding markets.

☐ (c) strong demand in this and surrounding markets with a light supply in this and surrounding markets.

☐ (d) strong demand with a light supply in this market, a strong demand and a heavy supply in surrounding markets.

☐ (e) weak demand with supply heavy in this market, a strong demand with a light supply in surrounding markets.

☐ (f) weak demand in this and surrounding markets with supply light in this and surrounding markets.

☐ (g) strong demand in this and surrounding markets with supply heavy in this market, light in surrounding markets.

☐ (h) weak demand in this and surrounding markets with supply light in this market, heavy in surrounding markets.

(5) Your efforts are designed to serve various parties to the total effort involved in marketing livestock. Among the following parties or agencies, please rank your users in order of importance. (Indicate "1" in front of the most important, etc.) Rank and indicate all those you consider to be users.

___Producers	___Newspapers
___Packers	___AP
___Radio	___Auction operators
___Wholesale distributors	___Dealers, local market operators
___Retail chain buyers	___"Yellow sheet" personnel
___Television	___Consumers
___Commission men	___(Other)_____
___UPI	_____
___Researchers	_____

(6) Over the past year, have you

(a) received any letters, phone calls, or direct contacts from information users in which they offered suggestions for changes in market reporting? ☐ yes ☐ no
If yes, what was the basic suggestion(s)?_____
_____
If yes, how often did you receive such contacts?_____
_____

(b) initiated contacts with information users by phone, letter or otherwise to see what suggestions they might have? ☐ yes ☐ no
If yes, what suggestions did they (your contacts) make?
_____
If yes, how often do you make such contacts?_____
_____
If yes, what prompted your action to establish contacts with users?_____

If no, why did you feel such efforts to establish contacts were not needed?_____

(c) altered your information gathering and dissemination procedures in this office as a result of general directives from market news supervisors in Washington (e.g., your area supervisor)? ☐ yes ☐ no
If yes, what alterations were made?_____

In your opinion, why were these alterations needed?

(d) conveyed any suggestions made by information users with whom you have made contact to your supervisors?
☐ yes ☐ no
If yes, to whom did you forward the information?_____

(7) Mark any of the following which you feel characterizes the manner in which your efforts are organized and conducted.

☐ (a) Rely primarily on procedures as established by superiors.

☐ (b) Try to keep your method of operation essentially the same as other market news offices. What office do you use as a "model"?_____

☐ (c) Emphasize reporting facts and allow the user to select the information he needs.

☐ (d) Observe the behavior of your clients (information users) and, based on your own intuition, experience and observations of their typical behavior and problems, decide what their needs are and try to meet them--subject, of course, to prescribed operating limits.

☐ (e) Try to put yourself in the client's situation, to understand his typical behavior patterns, and then seek to fill the needs you discover he will have within the limits as in (d).

☐ (f) Alter what would be your preferred procedure because rules restrain your activities.

☐ (g) The following combination of the above. (Please list in order of importance.)_____

☐ (h) None of the above. Specify your approach._____

_____

_____

(8) Over the past year, do you recall

(a) having questions addressed to you concerning your qualifications and training for your position?
☐ yes ☐ no
If yes, which of the following best typifies your response?

☐ 1. Did not have the time to give the question(s) any real consideration.

☐ 2. Avoided answering since this would have been boasting.

☐ 3. Feel market participants should realize the reporter has been trained and possesses the necessary qualifications.

☐ 4. Explained in an objective manner the basic qualifications and training required for the position of market reporter.

☐ 5. Referred the question to someone else. Who?

_____

(b) activities on your part to promote the use of the information you disseminate by the various parties to the marketing process? ☐ yes ☐ no
If yes, what prompted your efforts?_____

_____

If no, why did you not make such efforts?_____

_____

(9) Reflect for a moment on the way in which you construct your market reports. Which of the following do you feel is (are) involved as you organize, word, and disseminate the message?

☐ (a) Try to use the fewest possible words to convey the report, never repeating a point or interpretation using other words or phrasing it another way.

☐ (b) Add words and/or different phrasing when you feel the report might not be clear (convey the interpretation you wish) when constructed with the fewest possible words.

☐ (c) Try to avoid the use of words which are capable of being interpreted in more than one way.

☐ (d) When words which might be interpreted in more than one way are used, try to make their meaning clear by the way sentences and phrases are constructed, even though this may mean a longer report.

☐ (e) Make the report as complete and clear as possible, subject to mass media demands for a short or brief report.

☐ (f) Use as few words as possible since recipients of the reports are familiar with all terminology used and will understand the report.

☐ (g) Try to make the report colorful and thus more interesting and appealing to a wider audience.

☐ (h) Following combination of the above. (Please list in order of importance.)_____

☐ (i) Other approaches or problems encountered. Specify.

_____

(10) Consider the producer as a receiver of the information which you disseminate. As he receives and examines that information, he must have a purpose in mind. Which of the following, in your opinion, would best typify that purpose?

☐ (a) He uses the information to verify observations he has made through personal contacts with dealers, market operators, commission men, etc.

☐ (b) He uses the specific price, weight, and grade information you have disseminated to make comparisons among alternative markets and by taking account of marketing costs, reaches a conclusion as to which market is best and how much more he will make by selling at that specific market rather than alternative markets.

☐ (c) He uses the specific price, weight, and grade information you have disseminated to establish probable prices at alternative markets and chooses the market which is most likely to yield him a reasonable return, not necessarily the highest possible return.

☐ (d) He receives the information and uses it as part of a total accumulation of information which then builds a basis for decisions. Since he does his own interpreting, the information you make available to him should be objective facts, quantitative whenever possible, and thus largely free of any evaluation and/or interpretation on your part as to the trends in the market.

☐ (e) The following combination of the above. (Please list in order of importance.)_____

☐ (f) Any other view as to the purpose of the producer. Please specify._____

_____

(11) The following are a number of observations on two consecutive market days. You are asked to evaluate the market for the second day in terms of change from the previous day. The days need not be specified, but do not think in terms of Friday and then Monday. If none of the evaluations listed seem adequate, write in the qualification or change you would make in the "other" blank. Always choose one of the specific alternatives, however, and then write in your changes or qualifications.

(a) First day. The market has a relatively large supply of slaughter steers which will grade Choice and weigh 1000-1200 pounds. The price range for these Choice steers was observed to be $25.00-$27.00 per cwt. High Choice steers in this weight range sold at $26.50-$27.00, with most of the loads going at $27.00.

Second day. The supply of Choice 1000-1200 pound steers is still relatively large. Early in the session, the high Choice steers are observed to be bringing $27.00. However, a price of $26.50 begins to appear consistently as the session proceeds toward completion.

Which of the following best describes the "second day" market compared to the "first day" market for high Choice steers?

☐ steady

☐ weak to 25¢ lower

☐ 25¢ lower

☐ weak to 50¢ lower

☐ 50¢ lower

☐ weak to $1.00 lower

☐ $1.00 lower

☐ strong to 25¢ higher

☐ 25¢ higher

☐ strong to 50¢ higher

☐ 50¢ higher

☐ strong to $1.00 higher

☐ $1.00 higher

☐ Other_____

_____

(b) First day. High Choice 1000-1200 pound steers sell at $26.00-$26.75, with most of the sales at $26.50. Prime 1000-1200 pound steers sell for $26.50-$27.25, with most of the sales at $27.00.

Second day. Four loads of high Choice are received, two loads sell at $26.00 and two at $26.50. Several loads of mixed Prime and high Choice sell at $26.75. Prime steers brought mostly $27.00. (Please overlook the small number of loads used for purposes of simplicity; the proportions of the total market at each price are the important issues and you should assume those are the same if your market would have many more than four loads of high Choice steers.)

Which of the following best describes the "second day" market as compared to the "first day" for high Choice steers?

- ☐ steady
- ☐ weak to 25¢ lower
- ☐ 25¢ lower
- ☐ weak to 50¢ lower
- ☐ 50¢ lower
- ☐ weak to $1.00 lower
- ☐ $1.00 lower
- ☐ strong to 25¢ higher
- ☐ 25¢ higher
- ☐ strong to 50¢ higher
- ☐ 50¢ higher
- ☐ strong to $1.00 higher
- ☐ $1.00 higher
- ☐ Other_____

(c) First day. High Choice 1000-1200 pound slaughter steers sell for $26.00-$27.50, with most sales observed at $27.25. Have 10 loads of high Choice on the market.

Second day. Again, 10 loads of high Choice, 1000-1200 pound steers. Three loads show signs of excessive fill and bring $26.50. Two loads show bruise damage and also bring $26.50. The other five loads all bring $27.25.

Which of the following best describes the "second day" market as compared to the "first day" for high Choice steers?

- ☐ steady
- ☐ weak to 25¢ lower
- ☐ strong to 25¢ higher
- ☐ 25¢ higher

- [ ] 25¢ lower
- [ ] weak to 50¢ lower
- [ ] 50¢ lower
- [ ] weak to $1.00 lower
- [ ] $1.00 lower
- [ ] strong to 50¢ higher
- [ ] 50¢ higher
- [ ] strong to $1.00 higher
- [ ] $1.00 higher
- [ ] Other_____

(d) First day. Receive 10 loads of high Choice, 1000-1200 pound slaughter steers. They sell for $26.50-$27.00, with three loads at $26.50, four loads at $26.75, and three loads at $27.00.

Second day. Have 12 loads of high Choice, 1000-1200 pound slaughter steers. Two loads belonging to a seller shipping to the market for the first time bring $26.00. Of the 10 loads remaining, three bring $26.50, four bring $26.75, and three loads bring $27.00.

Which of the following best describes the "second day" market as compared to the "first day" for high Choice steers?

- [ ] steady
- [ ] weak to 25¢ lower
- [ ] 25¢ lower
- [ ] weak to 50¢ lower
- [ ] 50¢ lower
- [ ] weak to $1.00 lower
- [ ] $1.00 lower
- [ ] strong to 25¢ higher
- [ ] 25¢ higher
- [ ] strong to 50¢ higher
- [ ] 50¢ higher
- [ ] strong to $1.00 higher
- [ ] $1.00 higher
- [ ] Other_____

(e) First day. High Choice 1000-1200 pound steers bring $27.00-$28.00 with most sales at $27.50.

Second day. Supply seems to be light relative to demand for high Choice, 1000-1200 pound steers and sales are made primarily at $28.00 with a few loads reaching $28.50.

Which of the following best describes the "second day" market as compared to the "first day" for high Choice steers?

- ☐ steady
- ☐ weak to 25¢ lower
- ☐ 25¢ lower
- ☐ weak to 50¢ lower
- ☐ 50¢ lower
- ☐ weak to $1.00 lower
- ☐ $1.00 lower
- ☐ strong to 25¢ higher
- ☐ 25¢ higher
- ☐ strong to 50¢ higher
- ☐ 50¢ higher
- ☐ strong to $1.00 higher
- ☐ $1.00 higher
- ☐ Other _____

_____