ACCOUNTING IN CONTEXT OF COMMUNICATION, LANGUAGE, AND INFORMATION THEORIES: A PARTIAL ANALYSIS

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ABSTRACT

Accounting at various times has been referred to as a communication process, a language, and a conveyor of information. Given this condition, an analysis of accounting in terms of the theories relating to those references would enable an understanding of: (1) how well the parts of accounting conform with language theory; (2) how communication theory can aid in the clarification and improvement of the accounting communication process; and (3) how relevant is information theory for the refinement of accounting information. This study is a partial analysis which presents some implications of those theories for accounting.

COMMUNICATION AND LANGUAGE: PROCESS AND MEANS

Accounting often times has been referred to as a communication process, however, it is more appropriately designated as a language. According to Mattessich [1964:84]: "The *language* of accounting is comprehensive enough to warrant the transmission of information to a great many potential users. It is a language that - though it may change in dialect - is well proven. . . . [T]he chief problem is to find the golden middle between the quest for *simplicity* of language and *diversity* of its application." Communication has been defined in at least fifteen related but yet different ways [Littlejohn 1983:7]. Evidently, communication is much broader than language, with language being merely one means of communication, though being a very important means [Katz 1966:98; Littlejohn 1983:86].

The assumption that language is synonymous with communication is in great part due to the fact that language presupposes communication [Harris 1978:19]. However, the assumption of synonymy leads to problems, since language is neutral, whereas, communication is purposeful. If financial accounting is deemed to be a communication process rather than a means of communication, then the problem which arises is a consequence of the definition of communication. For instance Berlo [1960:12-13] and Miller [1966:13] maintain that the purpose of communication is to influence, that is "to affect with intent". The definition of communication is linked to the influencing of behavior. Accordingly, this definition may suggest to some accounting theorists that the

purpose of financial accounting information is to influence behavior, and accordingly users are conditioned as was Pavlov's dog. Ashton's [1976:16] findings suggest "evidence of the existence of functional fixation in an accounting context." However, language by definition is neutral. Language is a vocabulary with a given set of rules; it is a system [Katz 1966:45; Lyons 1977:26; Vandamme 1976:31-32].

According to Ayer [1955:27] language can be put to many uses: '*prescriptive, ritualistic, playful, or performative*' in addition to fact stating. There are many uses of language with each use fulfilling a particular function. Those functions must be carefully distinguished and analyzed for what they are; they cannot be "fitted into a single preconceived scheme." Therefore, it is the purpose assigned or use made of the language that can be non-neutra1. For instance pertaining to a firm's financial situation, Lebar [1982:187] found that "presentations of an event can vary because of omissions, differences in emphasis..., and the associations presented with factual material." Since financial accounting is a language, it is with little wonder that *neutrality* is a primary quality in financial accounting. *Despite the fact* that the FASB [1980] has relegated *neutrality* to a subsidiary role, Lebar [1982:184] found, in investigating the use of language in three related documents (10-Ks, annual reports, and press releases of firms), that: "annual reports demonstrated the lowest levels of extensionability (non-neutra1ity) and the highest levels of intensionality (*neutrality*) among the three documents."

Language is a basic means of encoding a message for communicating, and communication is a multi-purpose process. To reiterate a point made earlier, communication is a *complete* process [Lyons 1977:33], and language is only one of many means within the process; communication can take on many forms other than a formal language form. According to Ayer [1955:11,12], the territory of communication is very wide; many things are communicated: information, knowledge, error, opinions, thoughts, ideas, experiences, wishes, orders, emotions, feelings, moods.[1] The term communication can be used even more extensively as in the case of heat and disease among others.

Implications for Accounting

1. *Financial accounting* is a language and not a communication process; it encodes a message or messages in a transmittable form for transmission via a channel (financial

statements). The source of a message and receiver of a message are external to a language. In the case of financial accounting, transactions are external to it; likewise the receiver is external to financial accounting. *Financial reporting* is the communication process. *Financial reporting* expressly provides for the receiver, since it involves the transmission of the information to receivers.

2. *Financial accounting* is a language, and accordingly it is governed by language theory; thus it is necessary to examine language theory to assess further the implications for accounting.

LANGUAGE THEORY

The theory of language deals with systematization (an interpretation system) of certain types in which case four kinds of rules are present: (a) individual interpretation; (b) categorical and structural interpretation; (c) operational; and (d) meta-operational. The operational rules for the whole system are the most important rules. They are context bound. In this regard, of interest is the finding of Oliver [1974:312]: "CPAs generally possess concept meanings similar to the members of the five professional user groups. The CPAs evidently are capable of exchanging messages with other professionals. Thus, reasonably good inter-professional accounting communication can be maintained. It is the interjection of the accounting academic which most often 'muddies the waters.'" Operations on individual and categorical rules are determined by the operational rules. The general conditions and features for applying the operational rules are provided for by the meta-operational rules [Vandamme 1976:31-32].

The categorical and structural interpretation rules permit a clear distinction between/among different behavior patterns. Since the behavior pattern for an organization is uniquely determinable from its history, the organization as an operating system is identifiable. Accordingly, the categorical and structural rules are to minimize the loss of information on behavior patterns. In the absence of these rules, certain systems can be rendered non-identifiable [Hurwicz 1962:232-239]. This point is very important to illustrate. For instance, Bailey [1982:144] points out that many researchers using Security-Price Research Methods:

> argue that the systematic difference in the earnings numbers is

> irrelevant. They note that earnings and dividends are announced well before the publication of the information set containing the audit reports. They cite research . . . in arguing that, by the time the audit reports are released, the market will have impounded the earnings information. If it has, then the systematic difference in the earnings numbers will be irrelevant when the audit reports become public.
>
> If earnings differ, then other financial-statement data differ. Even if the earnings numbers are irrelevant, there is reason to believe that the other data and their derivatives, which were not published with the earnings announcements, are relevant. ...Manegold [1978] suggests that components of earnings produce better earnings forecasts than do earnings themselves. ...[M]any failure-prediction models employ predictors besides earnings . . . .

It may be said that language possesses form, and this form "emerges from the continual play of governing conditions or 'law'" [Cherry 1961:71]. Also, the theory of language is comprised of three sub theories [Katz 1966:110-111]: (a) phonological theory, (b) syntactic theory, and (c) semantic theory. For accounting purposes, only the syntactic and semantic theories are relevant since accounting is primarily in written form. The evidence is quite pervasive that with financial accounting the foregoing position is readily noticeable: "When an audit report is published, the market receives an information set containing not only an audit opinion but also financial statements and notes... Investors do not receive isolated bits and pieces of audit reports . . . . . [Bailey 1982:142-145]"

In the communication process, language is put to use either as symbolic language or emotive language [Ogden and Richards 1936:257-263]. When language is used in a symbolic sense, it serves to identify or catalogue things, actions or relationships. When language is used in an emotive sense, it serves to achieve desired results, to generate certain effects upon the intended listener's or reader's mind [Ogden and Richards 1936:149-153]. The distinction between symbolic language and emotive language is important for an understanding of the two branches of accounting. Financial accounting (symbolic language) reports communicate one type of information; while related to financial accounting, managerial accounting (emotive language) reports communicate another type of information. Conditioning of the reader (e.g., via financial budgets and variance analysis) is a fundamental characteristic of emotive language, while *neutrality* (as evidenced in financial statements) emerges as a fundamental quality of symbolic language. *Neutrality* implies the

presentation of facts which does not induce a particular reaction, but permits action based upon the facts and not on the manner in which the facts have been presented. Basically, influencing the reader is considered a contradiction of symbolic language.

Implications for Accounting

1. Managerial accounting can be equated with emotive language; this condition is so since budgets, as well as budget variances, are intended to produce a certain behavior. Managerial accounting is identified with the individual interpretation rules: the freedom of choice in the decision-making process.
2. Financial accounting, where there is no intent to condition the reader's mind, cannot be equated with emotive language. Financial accounting is equated with symbolic language since it depends upon the reader to associate the meaning to the totality of the presentation. To illustrate, following Cherry's [1961:72] approach, financial statements as a set of printed text are not merely a chain of individual words and numbers which have been picked one at a time; on the contrary, they constitute a whole. Financial accounting is identified with the categorical and structural interpretation rules.
3. Though the set of financial statements has structure, it has meaning for the reader only if it represents a continuity of reader's experience with past financial statements; thus *perspectives* of financial reporting must be distinguished from the use(s) of financial accounting.

PERSPECTIVES AND USES: COMMUNICATION AND LANGUAGE

At this juncture, the distinction between communication and language should be quite clear. One can talk about the *uses of language*, whereas one would talk about the *perspectives of communication*.

There are basically four communication perspectives: (a) behavioristic (the ways that individuals are affected by messages), (b) transmissiona1 (the transfer of information - media, time, and sequential elements); (c) interactional (reciprocal responses - feedback and mutual effects); and (d) transactional (situational and dynamic fulfilling individual and social functions) [Littlejohn 1983:23]. Clearly there are several aspects of the communication process. Communication implies *media*, whereas language does not.

Language, according to the abstracted linguistic approach, is a collection of habits which are described as a set of signs and rules [Cherry 1961:80]. Once the signs and rules of language have been obeyed, the uses of language are based upon the intentions of the users. Having drawn the distinction between language and communication, it is now necessary to discuss the two (syntactic and semantic) aspects of language as applied to accounting.

Syntactic Theory

Syntax refers to the rules that abstractly represent an infinite number of possible constructions with a given set of signs. According to Ullmann [1957:25-26]: "Syntax appears to be a science of relations..." As per Postal [1973:25]: "The rules of syntax define the set of sentences of the language. They specify what are sentences and what are not." The given circumstances result in the creation of new relationships (sentential structures), and the interpretations are dependent upon (created by) the new relationships.

The syntactic component is the input to the semantic component of language. The semantic component is purely interpretive; it relates the abstract formal structures of the syntatic component to a representation of conceptualization [Katz 1966:111]. "The primary consideration in deciding what sort of rules will appear in the syntactic component is the character of the sentence structure that these rules must describe" [Katz, 1966:124]. Accordingly, sentences of the accounting language are a united series or a chain link type series of symbols in the vocabulary of the accounting language, e.g. balance sheet, assets, equities, income statement, revenue, expenses, etc.

Apparently *four things* [Katz 1966:124] must be specified by the syntactic description: (1) the set of words (symbols) comprising the representation of the situation (e.g. cash, inventories, accounts payable); (2) the order of the words, since two distinct conditions (e.g., short-term investment vs long term investment) can contain the same set of words (e.g., marketable securities and cash in bank); (3) the specific group of words (e.g., cash restricted for plant expansion, deferred income tax payable); and (4) the syntactic categories to which each of the words and constituents belongs (e.g., assets - current assets, fixed assets; liabilities - current liabilities, long term liabilities). Given these four conditions, a structure assignment algorithm can be used.

Implications for Accounting

1. Financial accounting, as a language, imposes a structure on observed phenomena and reduces the uncertainty about the environment.
2. The imposition of structure is critical, since the accountant would be frustrated were he/she ab initio to attempt to relate empirical laws of accounting (continiuty, profitability) to specific commodities (shoes, dryc1eaning etc.)
3. Essentially, the accountant relates financial accounting laws to the simplest of constructed forms: a linear relation in binary oppositions (viz: assets and equities; revenues and expenses; fund sources and uses). Then, with the aid of the laws pertaining to these constructed forms, the accountant is in a position to simplify the complex: to decompose into suitable or workable e1ements the complicated behavior of real organizations into communicable accounting information.
4. It is through this structural approach that explanation (description) and prediction (projection) in accounting are made possible.

Explanation and Prediction in Accounting

Concepts, such as *matching* and *realization*, which are based upon observational knowledge, constitute the basis of the formulation of the explanatory (descriptive) principles of financial accounting theory. Given the kind of structure that these explanatory principles attribute to phenomena which are captured in financial accounting information, predictions (projections) are possible in managerial accounting. "The theory of probability supplies the instrument of predictive knowledge [Reichenbach 1963:233]." Empirical studies constitute a structure assignment algorithm. Such studies have confirmed that the underlying structure, as presented by financial accounting, permits to a limited extent fairly correct ex post predictions through financial analysis (e.g., bankruptcy prediction studies). However, due cognizance has to be given to the fact that knowledge of the world is only probable and not certain [Reichenbach 1963:232,233,246,248].

Following Littlejohn [1983:119], predictability in a language setting is different from predicting the future (some future event). Predictability in a language setting merely means the ability to decode a message transmitted in an accurate fashion. This definition or meaning of predictability is critical to accounting since the purpose of financial reporting

(the communication of financial accounting information) is to transmit a message. Undoubtedly, to be able to determine what message was transmitted is important.

MESSAGE AND MEANING

At this stage it is necessary to point out that in the communication process, a message is transmitted while meaning is not transmitted [Cherry 1961:43; Berlo 1960:214]. At this stage, the distinction between financial accounting information as *message* and the analysis of financial statements (financial analysis) as meaning should be clear. Meaning is attributed to a message by the recipient [Berlo 1960:184]. Therefore the purpose of structure is to insure correct transmission.

According to Postal [1973:25], the rules of syntax define or prescribe the set of relationships of a language, and specify what structural relationships are valid and what relationships are invalid. However, syntactic ambiguity does exist; that is a statement or proposition may have more than one underlying structure [Katz 1966:158].

Financial analysts apply algorithms to this structure (the balance sheet, as well as the income statement, the statement of cash flows, and the statement of changes in financial position). In this case following the reasoning of Katz [1966:129], the algorithmic structure assignment is said to be a function of F, where F(i,j) is the distinguishing features of a financial relationship (in linguistic terms, the set of phrase markers of the sentence S) that are given by the syntactic rules (Rj) of accounting principles.

Implications for Accounting

1. The financial statements, in a structural sense, do transmit (contain) messages which are decodable.
2. The structure of financial statements ensures a certain message transmission, which financial analysts decode.
3. The meaning of the message is the interpretation assigned to the message by the financial analysts.
4. In financial accounting, the same relative financial situation can be embodied in *a variety of absolute* financial components. This condition necessitates an appreciation of the semantic component of language.

THE SEMANTIC COMPONENT OF LANGUAGE

According to Cherry [1961:50], the syntactic component of language must not be confused with the semantic component. What is the semantic component?

Semantic Theory

The semantic component of language relates to meaning rather than to structural relationship; it is an interpretation of a message. Meaning is based upon rules which explicate an ability to interpret infinitely many statements [Katz 1966:152]. The syntactic theory stops at the level of words [Katz 1966:153]. The semantic rules start with the meaning given the syntactic structure. It is the foregoing condition which enables us to avail ourselves of the principle of compositionality, which is a traditional principle of semantics [Katz 1973:43]. This compositionality principle states that the meaning of a syntactically complex constituent, including complete propositions, is essentially a compositional function of the meaning of its parts.

In order to obtain a compositional representation of the meanings of complete propositions from the meanings of their smallest syntactic parts, both a dictionary and a projection rule are required. The role of the dictionary is to: (1) list each lexical item of the language, and (2) pair each item with a set of lexical readings. The role of the projection rule is to specify how lexical readings for the syntactic atoms can be combined to form derived readings for a complete proposition [Katz 1973:43]. According to Lyons [1977:47], the semantic content of a proposition is the set of state-descriptions that it eliminates.

Again the issue of ambiguity surfaces; this time, it is semantic ambiguity. Semantic ambiguity is the situation when multiple senses to the meaning of a statement or proposition occur as a result of an ambiguous word or words contained in the underlying structure [Katz 1966:159]. However, selection restrictions limit the ambiguity when ambiguous words appear by expressing the necessary and sufficient conditions for a possible derived interpretation. In this regard, "[t]he projection rules of the semantic component for a language characterize the meaning of all syntactically well-formed constituents of two or more words on the basis of what the dictionary specify about these words [Katz 1966:161].

Implications for Accounting

1. The semantic component of financial accounting is embedded in the relationships of

individual items (ratios, trends, etc.) as contained in financial statements. The meaning(s) of these relationships is (are) assigned by financial analysts.

2. The terminology of financial accounting constitutes the dictionary, and the interpretive rules for financial statements analysis constitute the projection rule.
3. Financial analysts, given the relationships considered important to their task, assign meaning to the relationships which are present in the financial statements under scrutiny.
4. The process, which underlies the purpose of analysis of financial statements, is the search for information. This condition leads us to the next section; which is an enquiry into the nature of information.

INFORMATION THEORY

A definition of information theory may be appropriate to shed light on the concept of information. "Information theory is a formal mathematical theory, based on probability and without any value for empirical prediction, or need for empirical validation. It is not itself a model or theory of communicative behavior, but it has been extremely influential in formulating problems, and shaping models for the study of communication processes [McQuail 1975:39]." While "communication is a serial process involving the phases of encoding, sending, medium, receiving, and decoding [Haney 1960:vii]", communication is not always purposive and intentional [McQuail 1975:40]. "Communication is the process by which persons co-create and co-manage reality [Pearce and Cronen 1980:2l]."

"'Information Content' is not an inherent *property* of a message, a display, [or] a situation; it is a function, which has a measurable value only with reference to some class of receivers. The relevant characteristics of a receiver are (1) the elements he [she] can handle as units, (2) the categories he [she] can distinguish, and (3) the probabilities he [she] associates with each category" [Quastler, 1955, p. 146]. It is very important to note that Information Theory is basically a theory of signal transmission. There exists a transmitter who operates on the message to produce a signal suitable for transmission over a channel. The signal, of course, takes different forms, depending upon the communication system (e.g. sound pressure, electromagnetic wave, the printed word) [Pearce nd Cronen, 1980, pp. 44-45]. It may seem disappointing to some accounting theorists that Information Theory has nothing to do with meaning. It may appear even a bit bizarre, since according to Information

Theory information is equated with *entropy* [Littlejohn 1983:119; Pearce and Cronen 1980:44-46].

Entropy and Redundancy

According to Littlejohn [1983:199] and Pearce and Cronen [1980:46], information is equal to entropy. Entropy in this setting means randomness, and randomness is equal to uncertainty; *then information is equal to uncertainty*. It is interesting to note that Rudolf Clausius, in producing the second law of thermodynamics in 1854, used the term *entropy* (after the Greek word 'transformation') to mean the measure of what has changed between the initial and final states of a system. Entropy deals with the irreversibility of real processes - events that occur with the passage of time. Entropy is a measure of the unavailability of energy [Gillispie 1960:395-402].

"In information theory, entropy becomes a measure of the uncertainty of our knowledge [Gillispie 1960:404]." Abdel-Khalik [1974] has analyzed the manner in which entropy from information theory has been used in accounting. He questioned the advisability of its use, and concluded that the measure of information loss based upon the concept of entropy does not measure what it purports to measure. On the other hand, *redundancy is equated with predictability.* Predictability here is different from predicting the outcome of some future event. It merely means the ability to decode a message transmitted in an accurate fashion [Littlejohn 1983:119]. Since the transmission of a message entails a cost, the cost of transmission can be reduced by reducing redundancy (predictability) in a system; but, in so doing, the reliability is lessened.

Basically, two principles of general importance are derived from information theory: (1) information content is inversely proportionate to probability of occurrence; (2) a certain amount of redundancy in an information system is not only inescapable, but desirable [Lyons 1977:43]. Redundancy is an essential property of language. It guards against misinterpretations by means of additional signs or rules [Cherry 1961:32]. "Syntactic redundancy implies additions to a text; something more is said or written than is strictly necessary [the barebone] to convey the message... But what are the barebones of a message?.. Shannon has described a technique for assessing the redundancy in printed texts (of a given class) on an *average*, by observing how much is predictable, or guessable, by the

reader [Cherry 1961:116]." Redundancy is critical for users' understanding because of the limitation of language itself. Semantic redundancy requires that extra signs be added until we are satisfied that our meaning has been conveyed [Cherry 1961:117].

Redundancy rules economize the formulation of the dictionary, state generalizations and represent inclusion relations among concepts; and simplify the readings by establishing the semantic categories of language. In the natural sciences, the theory is best accepted if it has the simplest set of laws for describing the phenomena. Accordingly, for each linguistic description, the sets of redundancy rules must afford the best simplification of the lexical readings in their respective dictionaries [Katz 1966:233-234,237]. The ideal system encodes just enough redundant information in signals to permit the recovery by the receiver of any information lost as a result of noise [Lyons 1977:45]. "Within this setting, any ...[property] of the signals which enable the receiver to identify a particular item" is signal information [Lyons 1977:41].

Implication for Accounting

The implication for financial accounting revolves around the term *predictability.* Some accounting theorists have argued for current value financial accounting in order that financial accounting information would possess predictive value: the ability to project into or predict the future. However, financial accounting information can only satisfy the predictive criterion of being able to be decoded. Whereas, managerial accounting is free of that constraint.

LANGUAGE: EFFECTIVENESS AND LIMITATION

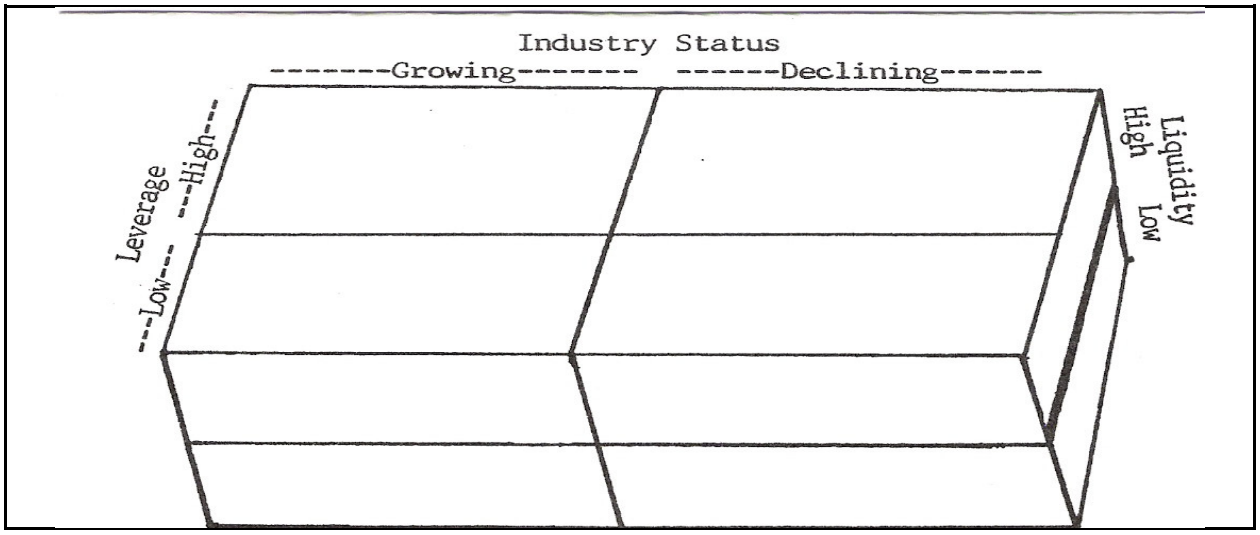
Language is used for making statements descriptive of states-of-affairs, also for factual information in the sense of evaluated data [Lyons 1977:50]. Language can convey a variety of conditions (e.g., vagueness, uncertainty, approximations, the lack of sharp contours) [Ullmann 1957:92]. For language, in general, this ability is fundamental; but for accounting, the intentional or unintentional desire to convey those conditions have to be guarded against. The presence of those conditions, given the reasoning of Lebar [1982], would constitute a severe limitation on accounting information.

However, a real limitation exists which has to be overcome. "When we speak or write about anything, we can say only a finite number of things about it. We cannot describe and

convey ideas with infinitesimal precision; we cannot classify or pin-point with absolute accuracy but must always be content to do so within some arbitrary limits of practical limits . . . If greater precision is required . . . more can be said; but we cannot continue indefinitely [Cherry 1961:86]." This restriction is termed quantization, where quantum is the required, desired, or allowed amount of what can be conveyed [Cherry 1961:88].

Cherry's [1961:88] model, a "three-attribute space, quantized into binary cells", is the type of model used by financial analysts. By using a host of quantal units derivable from financial statements, financial analysts perform a quantization of observation of financial phenomena. This approach gives due cognizance to the fact that: "[t]he affective side of language is just as fundamental as its cognitive function... But it should always be remembered that, in many cases, it is a question of... [relationships], not a yes-or-no decision [Ullmann 1957:97]." In Figure 1, three critical attributes of a firm are presented.

FIGURE 1



These three attributes are placed in binary opposition. In this setting, each attribute is associated with two possible states. Following Cherry [1961:93], an N-attribute space can be selected in which 2^N states can be established. Financial analysis is conducted within this basic setting.

MEANING:TRANSMISSION VS RECEPTION

Language within the communication process is used to set up: (1) thoughts (symbolic language serving to identify or catalogue things, actions or relationships), or (2) responses

(emotive language serving to achieve specific results, or produce particular effects upon the receiver's mind) [Cherry 1961:73,74,103]. Hence, communication is the intentional transmission of factual or propositional information by means of a system with established signals.

It is well established in the literature that signal information is a message which contains surprise value [Lyons 1977:45]. Therefore, there is a need for clearly establishing the distinction between a communicative signal and an *informative* signal. If a signal is *intended* by the transmitter to make the receiver aware of something previously unknown to the receiver, it is a *communicative* signal. For instance, on one hand, a qualified audit report [Firth 1978:649] serves as a communicative signal; and the selection by management of specific financial ratios [Williamson 1984] to report to the general public would constitute communicative signals. On the other hand, if the receiver becomes aware of something previously unknown to the receiver but the transmission of such awareness was not intentionally transmitted by the transmitter, the signal transmitting that awareness is an informative signal [Lyons, 1977, p. 33].[2]

Implications for Financial Reporting

Since it is only the message that is transmitted and not the meaning, financial reporting would be characterized by both communicative and informative signals.

CONCLUSION

Though not exhaustive, the foregoing analysis and the enumerated implications provides one framework, inter alia, which can lead to more extensive research, a better understanding of accounting, and more effective assessment of financial reporting.

ENDNOTES

1 The evidence on financial reporting presented by Lebar [1982] conforms to this setting.

2 Adelberg [1979] attempted to assess the correspondence between transmission and reception of a message and found a lack of correspondence between the intended and the acknowledged signal. Also, see Bailey [1981] on the issue of unintended message signals.

REFERENCES

Abdel-Khalik, A.R. (1974) "The Entropy Law, Accounting Data, and Relevance to Decision-Making." *Accounting Review* V.49:271-283.

Adelberg, A.H. (1979) "A Methodology for Measuring the Understandability of Financial Report Messages." *Journal of Accounting Research* V.17:565-592.

Ashton, R.H. (1976) "Cognitive Changes Induced by Accounting Changes: Experimental Evidence on the Functional Fixation Hypotheses." *Journal of Accounting Research* V.14:1-17 (Supplement).

Ayer, A.J. (1955) "What is Communication?" *Studies in Communication.* Introduction by B. Ifor Evans. London: Martin Secker & Warburg.

Bailey, W.T. (1982) "An Appraisal of Research Designs Used to Investigate the Information Content of Audit Reports." *Accounting Review* V.57:141-146.

_____. (1981) "The Effects of Audit Reports on Chartered Financial Analysis' Perceptions of the Sources of Financial-Statement and Audit-Report Messages." *Accounting Review* V.51:882-896.

Berlo, D.K. (1960) *The Process of Communication: An Introduction to Theory and Practice.* New York; Chicago; Toronto; London: Holt, Rhinehart and Winston.

Cherry, C. (1961) *On Human Communication: A Review, A Survey and A Criticism.* New York: Science Editions, Inc.

FASB. (1980) *Statement of Financial Accounting Concepts No.2: Qualitative Characteristics of Accounting Information.* Stamford, Connecticut: Financial Accounting Standards Board, May, .

Firth, M. (1978) "Qualified Audit Reports: Their Impact on Investment Decisions." *Accounting Review* V.53:642-650.

Gillispie, C.C. (1960) *The Edge of Objectivity: An Essay in the History of Scientific Ideas.* Princeton, New Jersey: Princeton University Press.

Haney, W.V. (1960) *Communication: Patterns and Incidents.* Homewood, Illinois: Richard D. Irwin, Inc.

Harris, R. (1978) *Communication and Language*. Oxford: Clarendon Press .

Hurwicz, L. (1962) "On the Structural Form of Interdependent Systems." *Logic, Methodology and Philosophy of Science: Proceedings of 1960 International Congress.* Ed. by E. Nagel, P. Suppes, & A. Tarski. California: Stanford Univ. Press.

Katz, J.J. (1966) *The Philosophy of Language.* New York; London; Harper & Row.

_____. (1973) "The Realm of Meaning." *Communication, Language and Meaning: Psychological Perspectives.* Ed. by G.A. Miller. New York: Basic Books.

Lebar, M.A. (1982) "A General Semantics Analysis of Selected Sections of the 10-K, the Annual Report of Shareholders, and the Financial Press Release." *Accounting Review*. V.57:176-189.

Littlejohn, S.W. (1983) *Theories of Human Communication.* Second Edition. Belmont, California: Wadsworth Publishing Company.

Lyons, J. (1977) *Semantics.* Vol. 1. Cambridge; New York: Cambridge University Press.

Mattessich, R. (1964) *Accounting and Analytical Methods: Measurement and Projection of Income and Wealth in the Micro and Macro-Economy.* Homewood, Illinois: Richard D. Irwin, Inc.

McQuai1, D. (1975) *Communication.* London; New York: Longman Group Limited.

Miller, G. (1966) *Speech Communication: A Behavioral Approach.* Indianapolis; New York; Kansas City: The Bobbs-Merrill Company, Inc.

Ogden, C.K. and Richards, I.A. (1930) *The Meaning of Meaning: A Study of the Influence of Language upon Thought and The Science of Symbolism.* With essays by B. Malinowski and F.G. Crookshank. London: Kegan Paul, New York: Harcourt, Brace.

Oliver, B.L. (1974) "The Semantic Differential: A Device for Measuring the Interprofessiona1 Communication of Selected Accounting Concepts." *Journal of Accounting Research* V.12:299-316.

Pearce, W.B. and Cronen, V.E. (1980) *Communication, Action and Meaning: The Creation of Social Realities.* New York: Praeger Publishers.

Postal, Paul M. (1973) "The Realm of Syntax." *Communication, Language and Meaning: Psychological Perspectives.* Ed. by G.A. Miller. New York: Basic Books, Inc.

Quastler, H. (1955) "Information Theory Terms and Their Psychological Correlates." *Information Theory in Psychology: Problems and Methods.* Ed. by H. Quast1er. G1encoe, Illinois: The Free Press, Publishers.

Reichenbach, H. (1963) *The Rise of Scientific Philosophy.* Berkeley and Los Angeles: University of California Press.

Ullmann, S. (1957) *The Principles of Semantics.* Oxford: Basil Blackwell. Glasgow: Jackson, Son & Co.

Vandamme, F. (1976) *Language and Logic: Some Essays on Their Interrelations.* Gent, Belgium: Communication and Cognition.

Williamson, R.W. (1984) "Evidence on the Selective Reporting of Financial Ratios." *Accounting Review* V.59, No.2:296-299.