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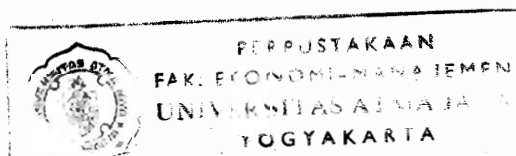
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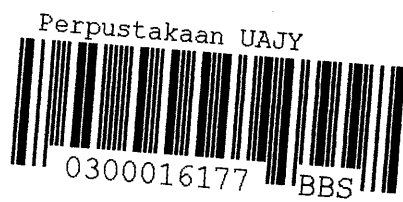
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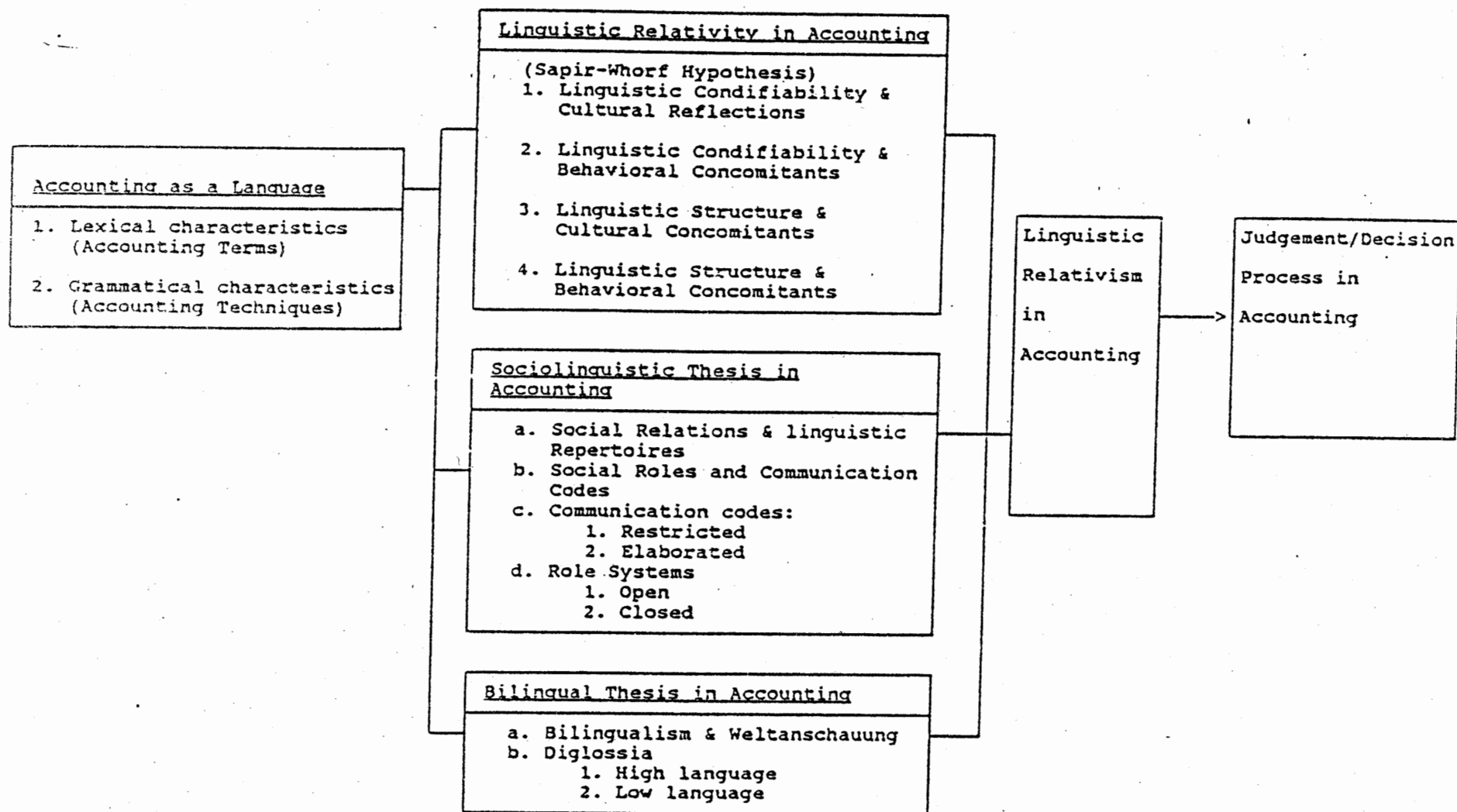


Session I:

ACCOUNTING AND LANGUAGE

Exhibit 3.4

Linguistic Relativism in Accounting: A Model



ACCOUNTING AND LANGUAGE

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1.0 INTRODUCTION

The idea that accounting may be viewed as a language has generated various empirical attempts to evaluate the connotative and denotative meanings of accounting constructs. Because it may be viewed as a language, accounting has been researched using the theories and the methods used in the study of language, namely the "Sapir-Whorf" hypothesis of linguistic relativism, sociolinguistics, and psycholinguistics. The objective of this paper is to elaborate on the attempts in the accounting research literature to view accounting as a language and use the theories and methods prevalent in the study of language.

The study of language is discussed in section 2 of this paper. The argument that accounting may be viewed as a language is presented in section 3. Section 4 presents the principle of linguistic relativity as it is systematized in the social sciences and accounting literature. Section 5 covers the empirical research investigating linguistic relativism in accounting. The relevance of sociolinguistics to accounting is discussed in section 6. The impact of bilingualism to concept perception in accounting is presented in section 7.

2.0 THE STUDY OF LANGUAGE

The study of language as a communication form or a cultural form is important for an understanding of human behavior. In general, the study of language has focused primarily on four areas: structural linguistics, developmental psycholinguistics, linguistic relativity, and sociolinguistics (Belkaoui [1978]).

1. Structural linguistics is devoted to the process of acquisition of language and the identification of formal structural properties.
2. Developmental psycholinguistics deals with formulating language acquisition and use as a special instance of a more general cognitive functioning [Chomsky, 1965; Fodor, 1966]. The main objective is to acquire a better understanding of the human thought process by an examination of grammatical organization and transformation.
3. Linguistic relativity deals with the role of language in our conception of the world. In brief, our world view, or *Weltanschauung*, as speakers of a given language forces us to interpret the world through the unique grammatical forms and categories that the language supplies [Sapir, 1956; Whorf, 1956].
4. Sociolinguistics, or the sociology of language, is concerned with the existence of different linguistic repertoires in a single language associated with

different social strata and corresponding to different social behaviors [Bernstein, 1958]. This is the study of the characteristics of language varieties, the characteristics of the functions, and the characteristics of their speakers as these three constantly interact and change one another within a speech community [Fishman, 1972].

3.0 ACCOUNTING AS A LANGUAGE

It is customary to call accounting a language or, more precisely, the language of business, since it is an important means of communicating information about a business concern. What makes accounting a language? The answer relies on the parallel between accounting and language. Hawes [1975] defines language as follows:

Man's symbols are not randomly arranged signs which lead to the conceptualization of isolated and discrete referents. Rather, man's symbols are arranged in a systematic or patterned fashion with certain rules governing their usage. This arrangement of symbol is called a language and the rules which influence the patterning and usage of symbols constitute the grammar of the language. [p. 6]

The above definition identifies two components of a language, symbols and grammatical rules. Therefore, the perception of accounting as a language rests on the identification of accounting symbols and rules. Belkaoui [1978] used the following argumentation:

- a) The symbols or lexical characteristics of a language are the "meaningful" units or words identifiable in any language. These symbols are linguistic objects used to identify particular concepts. These symbolic representations do exist in accounting. Numbers and words, debit and credits, may be viewed as symbols generally accepted and unique to the accounting discipline [McDonald, 1972].
- b) The grammatical rules of a language refer to the syntactical arrangements existing in any given language. Such rules also exist in accounting. They constitute the general set of procedures used for the creation and dissemination of accounting data. They formalize the structure of accounting in the same way as grammar formalizes the inherent structure of natural language [Jain, 1973].

Given the existence of both symbols and rules as major components, accounting may be defined *a priori* as a language and researched as the basis of the theories and methods used in the study of language.

4.0 THE "SAPIR-WHORF" HYPOTHESIS OF LINGUISTIC RELATIVISM

Anthropologists have always emphasized the study of language in their studies of culture. Sapir [1956] referred to the linguistic symbolism of a given culture. He

perceived language as an instrument of thought and communication of thought. In other words, a given language predisposes its users to a distinct belief. All these premises led to the formulation of the principle of linguistic relativity: that language is an active determinant of thought. Similarly, Whorf [1956] maintained that the ways of speaking are indicative of the metaphysics of a culture. Those metaphysics consist of unstated premises which shape the perception and thought of those who participate in that culture and predispose them to a given mode of perception.

4.1 SYSTEMATIZATION OF THE "SAPIR-WHORF" HYPOTHESIS

Fishman [1960] provided some order and systematization to the "Sapir-Whorf" hypothesis using a four-fold analytic scheme, as shown in exhibit 1. He distinguishes between the two levels of language—lexical and grammatical—and two types of behavior—linguistic and nonlinguistic. They may be described as follows:

Exhibit 1

A Systematic Version of the Whorfian Hypothesis

Data about language characteristics	Data of speaker's behavior	
	Linguistic data	Nonlinguistic data
Lexical characteristics	1	2
Grammatical characteristics	3	4

- (a) The lexical level consists of all words composing a language. Languages differ in terms of the number of terms used to describe a phenomenon.
- (b) Linguistic behavior refers to a choice among words, whereas nonlinguistic behavior refers to choices among objects.

This last distinction will become clearer with the explanation of each of the cells identified in exhibit 1.

- (1) Cell 1 implies a relationship between the lexical properties of a language and the speaker's linguistic behavior. Phenomena are codified differently in each language. What requires a highly differentiated codification in one language is minimally codified in another language. So, the linguistic behavior or choice of words for a particular phenomenon will be different from one language to another. For example, there are different terms for horses among speakers of Arabic and different terms for snow among speakers of Eskimo.

- (2) Cell 2 implies a relationship between lexical properties of a language and the nonlinguistic behavior of the users of a language. It assumes that speakers of a language who make certain lexical distinctions will be able to perform certain nonlinguistic tasks better and more rapidly than the speakers of languages who do not make these lexical distinctions [Brown and Lenneberg, 1954; Lenneberg, 1973; Lantz and Steffre, 1953].
- (3) Cell 3 implies a relationship between the grammatical characteristics and linguistic behavior. It assumes that the speakers of one language who use specific grammatical rules are predisposed to a world view different from the speakers of another language [Hoijer, 1951; Ervin-Tripp, 1969].
- (4) Cell 4 implies a relationship between grammatical characteristics and nonlinguistic behavior. For example, Carroll and Casagrande [1958] attempted to evaluate whether the speakers of a language such as Navaho who code for color, shape and size in the same verb will classify objects differently from the speakers of language who only code for tense, person, and number in their verbs, as in English. They found that the Navaho-dominant Navahos made object choice as predicted by the grammatical verb more often than did the English-dominant Navahos.

4.2 SYSTEMATIZATION OF LINGUISTIC RELATIVISM IN ACCOUNTING

To accomplish the systematization, a differentiation is made in terms of the different characteristics of accounting language and the different data of cognitive behavior. The characteristics of accounting language have already been defined as the symbolic representations and the manipulation rules. The data of cognitive behavior in accounting refer to the user's behavior, which could be either linguistic or nonlinguistic. The systematization proposed by Belkaoui [1978] consisted of a four-fold analytical scheme as portrayed in exhibit 2. The cells are explained as follows:

Exhibit 2

Propositions of Linguistic Relativism in Accounting

Data about accounting characteristics	Data of user's behavior	
	Linguistic behavior	Nonlinguistic behavior
Symbolic representation	1	1
Manipulation rules	3	4

- (1) Cell 1 involves the relationship between the symbolic representations of accounting and the linguistic behavior of users. The codification structure in accounting is more differentiated than in ordinary English, leading to a

different linguistic behavior of users. The first level of the Whorfian in accounting may be expressed as follows:

The users that make certain lexical distinctions in accounting are enabled to talk and/or solve problems that cannot be easily solved by users that do not. [Belkaoui, 1978, p. 103]

It may be used as a conceptual justification for most studies evaluating the semantic meaning of accounting concepts or content [Oliver, 1974; Haried, 1973].

- (2) Cell 2 involves the relationship between the symbolic representations of accounting and the nonlinguistic behavior of users. In other words, it may be conjectured that phenomena or concepts which are highly codified in accounting will be recalled and responded to more often than those less highly codified concepts. This second level of the Whorfian hypothesis in accounting was expressed as follows:

The users that make certain lexical distinctions in accounting are enabled to perform (nonlinguistic) tasks more readily or completely than those that do not. [Belkaoui, 1978, p.103]

This proposition may be used as a theoretical net for those studies evaluating the impact of accounting content (extent of codification) on the user's decision making. For example, Abdel-Khalik [1973] reports on an empirical study concerning the stipulation that detailed financial information is more useful for lending decision making. Although his results support imputing a higher utility for detailed data only under certain conditions, they are conceptually justifiable under the second Whorfian hypothesis in the sense that the extent of aggregation (or codification) of data implies a different utility and a different nonlinguistic behavior.

- (3) Cell 3 involves the relationship between the accounting manipulation rules and linguistic behavior. This third level of the Whorfian hypothesis in accounting was expressed as follows:

The users that possess the accounting (grammatical) rules are predisposed to different managerial styles or emphases than those that do not. [Belkaoui, 1978, p.103]

Such a proposition could accomodate findings on the differences of common stock perception and preferences arising from the use of alternative accounting techniques [Green and Maheshwari, 1969; Belkaoui and Cousineau, 1977].

- (4) Cell 4 involves the relationship between the accounting manipulation rules and nonlinguistic behavior. The fourth level of the Whorfian hypothesis was expressed as follows:

The accounting techniques may tend to facilitate or render more difficult various (nonlinguistic) managerial behaviors on the part of users. [Belkaoui, 1978, p.103]

The proposition may be used as a theoretical net for the numerous studies evaluating the impact of alternative accounting methods on the user's decision making [Dyckman, Gibbins, and Swieringa, 1978; Belkaoui, 1980a].

5.0 ACCOUNTING RESEARCH IN LINGUISTIC RELATIVITY

Most empirical research investigated the role of accounting as a language and a vehicle of communication without explicit reference to the linguistic relativity hypothesis and by focusing on the connotative meaning of accounting constructs. All types of accounting constructs are assumed to have connotative as well as denotative meanings. The denotative meaning of a construct implies the communication of an objective description of the construct. The connotative meaning implies the communication of a subjective attitude or emotion about the construct. There are, therefore, positive and negative connotations of accounting constructs.

Haried [1972], in a first study, investigated the semantic dimensions of financial statements using the semantic differential technique developed by Osgood, Suci, and Tannenbaum [1957] to measure connotative meanings. In a second study, Haried [1973] reported on the use of a second technique, the antecedent-consequent method developed by Triandis and Kilty [1968] to measure denotative meanings. The antecedent-consequent techniques were found to be useful in examining semantic problems in external accounting communications, but the semantic differential structure within which meaning in accounting was held was different from the standard structure proposed by Osgood, Suci, and Tannenbaum [1957]. Houghton [1988] made a critical analysis of Haried's [1973] own data and showed that (1) the structure within which accounting meaning is held is largely consistent with the seminal work of Osgood, Suci, and Tannenbaum [1957]; and (2) the measured meaning of accounting concepts within that structure is consistent with expectations.

The other studies, however, relied on the semantic differential technique. First, Oliver [1974] used it to measure the semantic meaning of eight selected important accounting concepts using seven selected professional groups involved in the production and use of accounting data to obtain information concerning the relative communication among and between groups. His findings showed a highly significant difference in meanings on six of the eight concepts among the seven professional groups and a major role of the academicians in causing the lack of communications. Second, Flamholtz and Cooke [1978] used the area of human resource accounting as a vehicle for the study of the role of connotative meaning in the process of change in accounting. They also relied on the semantic differential

to identify the dimensions of selected traditional and human resource accounting constructs and position these constructs in a semantic space. The results showed the presence of two clusters of constructs: the traditional and the nontraditional. It was then argued that a "semantic halo effect" differentiates between the connotative meaning of traditional and nontraditional accounting constructs, which may explain resistance to accounting innovations such as human resource accounting or socioeconomic accounting. Third, Houghton [1987] also used the semantic differential technique to examine the connotative meaning (and the cognitive structure within which that meaning is held) of "true and fair view" from the point of view of both accountants and private (noninstitutional) shareholders. Significant differences were found between the responses given by accountants and private shareholders. In addition, the factor of cognitive structure in the "expert" accounting groups was seen to be more complex than in private shareholders.

Two studies relied on a psycholinguistic technique, the Cloze procedure. As defined by its creator, Cloze is a "method of intercepting a message from a transmitter (writer or speaker), mutilating its language patterns by deleting parts, and so administering it to receivers (readers or listeners) that their attempts to make patterns whole again potentially yield a considerable number of Cloze units" [Taylor, 1953, p. 416]. In a first study, Adelberg [1979] used the Cloze procedure to measure the understandability of various accounting communications. Empirical evidence showed that differential understandability exists across some, but not all, (1) financial report preparers, (2) financial report messages, and (3) financial report users. It also showed that (1) users do not understand well accounting policies, footnotes, and managements' analyses of operations; and (2) narrative disclosures are not well understood by commercial bank loan officers. In a second study, Adelberg [1982] used the Cloze procedure to empirically evaluate the communication of authoritative pronouncements in accounting. It showed that communication problems do not exist with either authoritative bodies or classes of accountants but do exist with two of the fifteen authoritative pronouncements tested.

All these empirical studies investigating the connotative meanings of accounting concepts focused essentially on the application of methodological techniques like the semantic differential, the antecedent-consequent method, and the Cloze procedure, and failed to integrate and explain their findings using any of the four Whorfian hypotheses. Testing of the four linguistic relativism hypotheses in accounting remains to be done.

6.0. RELEVANCE OF SOCIOLINGUISTICS TO ACCOUNTING

The role of language in defining communities and social relationships is the realm of sociolinguistics. Sociolinguistics assumes that the socialization of individual consciousness and the social molding of personality are largely determined by language [Bernstein, 1958]. The discipline deals with the interaction between two aspects of human behavior—the use of language and the social organization of behavior. The focus is on the generally accepted social organization of language usage within speech communities. This focus is known as the descriptive sociology of language and seeks to discover who speaks or writes what linguistic codes, to whom, when, and why. A second focus is conceived with the discovery of the

determinants explaining changes in the social organization of language use and behavior. It is known as the dynamic sociology of language. What both foci imply is the existence in any speech community of verbal varieties of languages or "verbal repertoires." Thus, the sociology of language attempts to explain the underlying causes of the verbal repertoires of a given speech community. The implication of the above statement is that within each language there are linguistic codes which play an important role as a mediator of the perceptual cognitive processes in defining the social environment [Bernstein, 1958; Schatzman and Strauss, 1955; Ervin-Tripp, 1969; Whiteman and Deutsch, 1968].

Relating this to accounting, Belkaoui [1980b] showed that various professional affiliations in accounting create different linguistic repertoires or codes for intragroup communications and/or intergroup communications which lead to a differential understanding of accounting and social relationships. Specifically, a selected set of accounting concepts was subjected to analysis using multidimensional scaling techniques to evaluate the intergroup perceptual differences among three groups of users. A sociolinguistic construct was used to justify the possible lack of consensus on the meaning of accounting concepts. The dimensions of the common perceptual space was identified. They were labeled as conjunctive, relational, and disjunctive by analogy to the process of concept formation. The sociolinguistic thesis was verified for both the conjunctive and the disjunctive concepts. Other issues for future research include: (a) the presence and the nature of the "institutional language" within each accounting professional groups; (b) the presence of a profession-linked linguistic code in the accounting field composed of a "formal language" and a "public language"; and (c) testing whether the public language is understood by users of public data (e.g., financial analysts) and whether the formal language is understood by users of formal data (e.g., students).

Multidimensional scaling techniques were also used by Libby [1979] to investigate bankers' and auditors' perceptions of the message communicated by the audit report. Although not clearly classified, this study falls in the area of sociolinguistics and accounting, since members of different occupational groups are compared as to their perception of an accounting construct, the audit report. Instead, the study argues that the research question can be structured within a "*cognitive conflict paradigm*," which is based on the lens model.

No disagreements were found as the study reports, surprisingly, that three tests of differences between the auditors' and bankers' perceptions suggested no large differences. This is the only study reporting no difference in the perceptions of connotative meanings of accounting constructs between members of different occupational groups.

7.0 RELEVANCE OF BILINGUALISM TO ACCOUNTING

While accounting is itself a language, its lexical and grammatical characteristics are expressed in each country in the spoken language of that country. Therefore, a problem of communication arises between unilingual accountants from different countries. A second problem may affect bilingual speakers. The two language systems available to bilingual speakers may provide cognitive enrichment or linguistic and perceptual confusion. A third problem facing bilinguals is whether

switching from one language to another leads to a better perception. In effect, language switching has been found to be related to higher levels of creativity and cognitive feasibility [Peal and Lambert, 1962], concept formation [Liedke and Nelson, 1968], verbal intelligence [Lambert and Tucker, 1973], and psycholinguistic abilities [Cassery and Edwards, 1973]. The three problems identified can affect the perception of accounting concepts by bilingual and unilingual speakers of languages.

Monti-Belkaoui [1983] conducted an experiment to evaluate the extent of these problems in accounting. The findings of their experiment on accounting concept perception supported the contention that unilingual speakers of separate languages differ from each other and from bilingual speakers in their perception of accounting concepts. Some of the findings also provided support for the contention that language switching may enhance understanding. The evidence suggests that fluency in two languages aids in the uniform acquisition and comprehension of accounting concepts. The need for (and efficacy of) the bilingual international accountant is a research area in need of more attention and empirical validation in the accounting discipline [Belkaoui, 1984, 1989, 1990].

8.0 CONCLUSIONS

A new facet of behavioral accounting is to examine the connotative and denotative meanings of accounting constructs and to investigate the differences in the perception of these constructs by different users and preparers. Most of these attempts were generally characterized by the successful use of the various methodologies used in the study of language, namely semantic differential, antecedent-consequent methods, Cloze procedure, and multidimensional scaling techniques. Some of these attempts went beyond the mere use of these techniques to support the research questions by theoretical models from linguistics; namely the "Sapir-Whorf hypothesis" of linguistic relativism, sociolinguistics, and bilingualism. Much remains to be done as (a) various accounting innovations have different connotative meanings to various professional groups and to various special interest groups; (b) various accounting "institutional" language repertoires arise out of the particular needs and interests of the members of the particular linguistic communities; and (c) the increase in international trade and the efforts to harmonize international accounting create communication perception and expectation problems for speakers of different languages of different cultural backgrounds. Both the profession and academia need to be attuned to these developing problems as they may affect the harmonious growth of the discipline internationally and within any country.

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The objective of this paper is to explore the application of sociolinguistics to accounting. Three professional groups of users and producers of accounting information were selected in order to determine if there were any differences in their linguistic behavior. A multidimensional scaling model applied to the matrix of similarity judgments enabled the identification of three dimensions and subject saliences. An analysis of variance applied to the individual saliences on each dimension allowed the verification of the sociolinguistic thesis of the differences in the interprofessional linguistic communication of accounting concept.

Flamholtz, E., and E. Cook. 1978. Connotative meaning and its role in accounting change: A field study. *Accounting, Organizations and Society* 3, no. 2: 115-40.

The objective of this paper is to use the area of human resource accounting to study the role of connotative meaning in the process of change in accounting. The semantic differential technique was used. Traditional and nontraditional clusters of constructs were observed. A "semantic halo effect" is suggested to exist as an explanation of the resistance of the subjects to the new accounting constructs of human resource accounting.

Houghton, K. A. 1987. True and fair view: An empirical study of connotative meaning. *Accounting, Organizations and Society* 12, no. 2 (March): 143-52.

The objective of this paper is to empirically examine the connotative meaning (and the cognitive structure within which that meaning is held) of "true and fair view" from the points of view of accountants and "private" (institutional) shareholders. The semantic differential technique was used. The findings show a difference between accountants and shareholders in their perception of the meaning of "true and fair view" as well as differences in their cognitive structures.

Monti-Belkaoui, Janice, and Ahmed Belkaoui. 1983. Bilingualism and the perception of professional concepts. *Journal of Psycholinguistic Research* 12, no. 2: 111-27.

The objective of this paper is to evaluate the intergroup perceptual differences of four experimental groups, made up of unilingual French, unilingual English, and bilingual accounting students. The linguistic relativism thesis provided the research hypotheses on the relationship between language access and usage and accounting concept perception. The multidimensional scaling techniques were applied to the matrix of subjects' similarity judgments on pairs of concepts, thus enabling the identification of three dimensions and subjects' reliances. An analysis of variance of individual saliences on each dimension provided evidence supporting the contention that unilingual speakers of separate languages differ from each other and from bilingual speakers in their perception of accounting concepts.

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Session II:

ALTERNATIVE PARADIGMS

ALTERNATIVE PARADIGMS

There is a lot of tension in accounting research due to the presence of competing paradigms. Each of these paradigms is striving for supremacy. Journals and research centers are created, and workshops, conferences, and round tables are used to give credibility to each paradigm. It is a normal situation observable in every other field. Each of these paradigms is the object of investigation and research by established scientific communities. In each of these communities, a paradigm creates a coherent, united viewpoint—a kind of *Weltanschauung*—that determines the way in which members view accounting research, practice and even education. In the interests of continuity and progress within the accounting discipline, these paradigms are subjected to constant verification and testing in search for possible anomalies. Accordingly, this chapter attempts to explicate the existing paradigms as well as the emerging alternative paradigms.

A GENERAL THEORY OF SCIENTIFIC REVOLUTIONS

A theory of scientific revolutions will focus on the progress of knowledge and the motivation for such progress. Thomas Kuhn's work focused on the progress of knowledge in a particular discipline or normal science.¹ This thesis of scientific revolutions rests on the concept of paradigm. After criticisms were raised about the different and inconsistent use of the term, Kuhn refined it for the second edition of his book:

In much of the book the term "paradigm" is used in two different senses. On the one hand, it stands for the entire constellation of beliefs, values, techniques that are shared by the members of a given community. On the other, it denotes one sort of

element in that constellation, the concrete puzzle-solutions which, employed as models or examples, can replace explicit rules as a basis for the solution of the remaining puzzles of normal science.²

These paradigms do not remain forever dominant. Anomalies are first recognized. The anomaly is incorrigible. A period of insecurity and crisis arises with a dispute between those who see the anomaly as a counter-example and those who do not: "Normal science repeatedly goes astray. And when it does—when, that is, the profession can no longer evade anomalies that subvert the existing tradition of scientific practice—then begins the extraordinary investigation that leads the profession at last to a new set of commitments, a new basis for the practice of science."³

The crisis continued with the emergence of alternative sets of ideas and clear identification of schools of thoughts. What actually goes on in the crisis period is not well known. H. Gilman McCann suggested the following characteristic levels of theoretical and quantitative work associated with the initial and final periods of a normal science:

1. The level of theoretical work will rise as the revolution develops. The rise is composed of (a) an increase in the level of theoretical work among followers of the given paradigm and (b) an initially high level of theoretical work by the followers of the new paradigm, followed by a decline once the success of the new paradigm is assured.
2. The shift to the new paradigm will occur earlier among theoretical papers than among others.
3. The level of quantitative work will rise as the revolution develops. The rise is composed of (a) an increase, possibly followed by a decline, in the level of quantitative work among the followers of the given paradigm and (b) an initially high level of quantitative work among supporters of the new paradigm, possibly followed by a decline as the new paradigm succeeds and new problems come to light.
4. The shift to the new paradigm will occur earlier among quantitative papers than among others.
5. The rise in the level of quantitative work will be most pronounced among theoretical papers.
6. There will be an increase in the number of authors as the revolution develops.
7. There will be an increase in the productivity of authors as the revolution progresses.
8. The shift to the new paradigm will occur earlier among papers of younger authors than among papers of older ones.
9. The supporters of the new paradigm will be younger than the defenders of the old one.
10. There will be few neutral papers.

11. The proportion of citations to authors supporting the new paradigm will increase during the revolution.⁴

All laws and propositions become subject to empirical testimony. The final rejection of one paradigm for another does not, however, rest exclusively on empirical evidence. Nonlogical factors, including metaphysical views, philosophical positions, ethnocentrism, and nationalism, and the social characteristics of the scientific community may have a bearing on the decision.⁵ Domination of the new paradigm is accompanied by recognition bestowed on its proponents. It is this recognition, rather than money or power, which will become the motivating factor for researchers in a given paradigm and in a given scientific community. Basically, researchers will exchange social recognition for information. As stated by W. O. Hagstrom:

Manuscripts submitted to scientific periodicals are often called "contributions," and they are, in fact, gifts.⁶

In general, the acceptance of a gift by an individual or a community implies a kind of recognition of the status of the donor and the existence of certain kinds of reciprocal rights. . . . in science, the acceptance by scientific journals of contributed manuscripts establishes the donor's status as a scientist—indeed, status as a scientist can be achieved only by much gift-giving—and it assures him of prestige within the scientific community.⁷

Although it may be difficult to disagree with the notion that recognition is the primary motivation for research in any discipline, it is tempting to argue that the driving force is the satisfaction of a job well done. R. K. Merton argued the case as follows:

Recognition of originality becomes socially validated testimony that one has successfully lived up to the most exacting requirements of one's role as a scientist. The self-image of the individual scientist will also depend greatly on the appraisals by his scientific peers of the extent to which he has lived up to this exacting and crucially important aspect of his role.⁸

There is, nevertheless, a gem of psychological truth in the suspicion enveloping the drive for recognition in science. Any intrinsic reward—game, money, position—is morally ambiguous and potentially subversive of culturally esteemed values. For as rewards are meted out, they can displace the original motive: concern with recognition can displace concern with advancing knowledge.⁹

-With recognition as either a goal or a sign of a job well done, the researchers in the dominant paradigm, and the other still struggling paradigms ("the resisters"), communicate their information either in formal channels of communication for institutional recognition or indirect communication for elementary recognition.¹⁰

ACCOUNTING AS A MULTIPLE-PARADIGM SCIENCE

Concepts of Paradigms

Central to the general theory of scientific revolutions is the proper definition of the concept of a paradigm. Kuhn's use of the term is different and inconsistent. The narrow definition provided in the epilogue to the second edition of his book was still found vague.¹¹ It did not alleviate the major criticisms directed towards Kuhn's change of view that paradigms rise and fall as a result of political factors to the view that one paradigm wins over another for good reasons, including "accuracy, scope, simplicity, fruitfulness, and the like."¹² George Ritzer, for example, argued in favor of the first view and maintained that the emergence of a paradigm is essentially a political phenomenon.¹³ He stated:

One paradigm wins out over another because its supporters have more power than those who support competing paradigms and not necessarily because their paradigm is "better" than its competitors. For example, the paradigm whose supporters control the most important journals in a field and thereby determine what will be published is more likely to gain pre-eminence than paradigms whose adherents lack access to prestigious outlets for their works. Similarly, positions of leadership in a field are likely to be given to supporters of the dominant paradigm, and this gives them a platform to enunciate their position with a significant amount of legitimacy. Supporters of paradigms that are seeking to gain hegemony within a field are obviously at a disadvantage, since they lack the power outlined above. Nevertheless, they can, by waging a political battle of their own, overthrow a dominant paradigm and gain that position for themselves.¹⁴

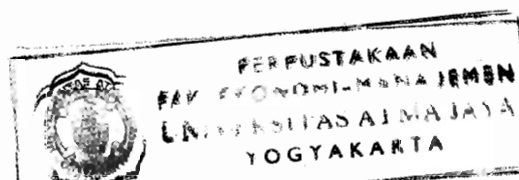
Phillips was in agreement with Ritzer's arguments about the first view and also argued that the reasons advanced in the second view are paradigm dependent.

With the view that paradigms are politics dependent, Ritzer offered the following definition of a paradigm.

A paradigm is a fundamental image of the subject matter within a science. It serves to define what should be studied, what questions should be asked, how they should be asked, and what rules should be followed in interpreting the answer obtained. The paradigm is the broadest unit of consensus within a science and serves to differentiate one scientific community (or subcommunity) from another. It subsumes, defines and interrelates the exemplars, theories, methods, and instruments that exist within it.¹⁵

The basic components of a paradigm emerge from Ritzer's definition:

1. An exemplar, or a piece of work that stands as a model for those who work within the paradigm
2. An image of the subject matter



3. Theories

4. Methods and instruments

Ahmed Belkaoui used Ritzer's definition to analyze scientific communities or subcommunities in accounting with the assumptions that (1) accounting lacks a single comprehensive paradigm and is a multiple-paradigm science, and (2) each of these accounting paradigms is striving for acceptance, even domination within the discipline.¹⁶ Although stated in terms of competing theories, the following statement could be used to argue for competing paradigms:

While the value of the prediction of a theory to users influences its use, it does not solely determine its success. Because the costs of errors and the implementation vary, several theories about the phenomena can exist simultaneously for predictive purposes. However, only one will be generally accepted by theorists. In accepting one theory over another, theorists will be influenced by the intuitive appeal of the theory's explanation for phenomena and the range of phenomena it can explain and predict as well as by the usefulness of its predictions to users.¹⁷

Following suggestions made by M. C. Wells and the 1977 American Accounting Association's publication of its *Statement on Accounting Theory and Theory Acceptance*, the following paradigms were suggested:¹⁸

1. The anthropological/inductive paradigm -- *primitive*
2. The true-income/deductive paradigm
3. The decision-usefulness/decision-model paradigm
4. The decision-usefulness/decision-maker/aggregate-market-behavior paradigm
5. The decision-usefulness/decision-maker/individual-user paradigm
6. The information/economics paradigm

Each of these paradigms is examined next with a particular focus on the four components of exemplar, image, theories, and methods.

The Anthropological/Inductive Paradigm

R. R. Sterling characterized what he called "the anthropological interpretation of accounting" as probably the most ancient and pervasive method of accounting-theory construction, and its method is to "observe accountants' actions and then rationalize these actions by subsuming them under generalized principles."¹⁹ Exemplars include the works of S. Gilman, Henry Hatfield, Yuji Ijiri, A. C. Littleton, and W. A. Paton.²⁰

Two other studies by M. J. Gordon and by R. L. Watts and J. L. Zimmerman qualify as exemplars of the anthropological/inductive paradigm.²¹ Both studies argue that management will select the accounting rule that will

tend to smooth income and the rate of growth in income. Gordon theorized on income smoothing as follows:

Proposition 1: The criterion a corporate management uses in selecting among accounting principles is the maximization of its utility or welfare. . . .

Proposition 2: The utility of a management increases with (1) its job security, (2) the level and rate of growth in the management's income, and (3) the level and rate of growth in the corporation's size. . . .

Proposition 3: The achievement of the management goals stated in Proposition 2 is dependent in part on the satisfaction of stockholders with the corporation's performance; that is, other things the same, the happier the stockholders, the greater the job security, income, etc., of the management. . . .

Proposition 4: Stockholders' satisfaction with a corporation increases with the average rate of growth in the corporation's income (or the average rate of return on its capital) and the stability of its income. This proposition is as readily verified as Proposition 2.

Theorem: Given that the above four propositions are accepted or found to be true, it follows that a management would within the limits of its power, that is, the latitude allowed by accounting rules, (1) smooth reported income, and (2) smooth the rate of growth in income. By "smooth the rate of growth in income," we mean the following: if the rate of growth is high, accounting practices that reduce it should be adopted, and vice versa.²²

Several empirical tests in the income-smoothing literature leave Gordon's model unconfirmed. Also, Gordon's assumptions that shareholder satisfaction is solely a positive function of income and that increases in stock prices always follow increases in accounting income have been seriously contested. To avoid the pitfalls that may exist in Gordon's model, Watts and Zimmerman attempted to provide a positive theory of accounting by exploring the factors influencing management's attitudes regarding accounting standards.²³ At the outset, Watts and Zimmerman assumed that management's utility is a positive function of the expected compensation in future periods and a negative function of the dispersion of future compensation. Their analysis showed that the choice of accounting standards can affect a firm's cash flow through taxes, regulation, political costs, information-production costs, and management-compensation plans.

Image of the Subject Matter. To those who adopt the anthropological/inductive paradigm, the basic subject matter is (1) existing accounting practices and (2) management's attitudes toward those practices. Proponents of this view argue in general either that the techniques are derived and justified on the basis of their tested use or that management plays a central role in determining the techniques to be implemented. Consequently, the accounting-research objective associated with the anthropological/inductive paradigm is to understand, explain, and predict existing accounting practices.

Theories. Two kinds of theories may be considered to be part of the anthropological/inductive paradigm. The first type of theory deals with all attempts to explain and justify existing accounting practices—the historical-cost approach to asset valuation, conventional cost-allocation techniques, bookkeeping techniques, and so on. The second kind of theory deals with attempts to explain management's role in the determination of techniques and includes the income-smoothing hypothesis and the beginnings of a positive theory of accounting.

Methods. Those who accept the anthropological/inductive paradigm tend to employ one of two kinds of techniques. Those interested in explaining and justifying existing accounting practices rely on analytic reasoning or on survey-research and observational methods. Those primarily interested in explaining management's role in the determination of techniques rely on empirical techniques.

The True-Income/Deductive Paradigm

Exemplars. Studies that qualify as exemplars of the true-income/deductive paradigm are the works of Sidney Alexander, J. B. Canning, E. O. Edwards and P. W. Bell, Kenneth MacNeal, Maurice Moonitz, W. A. Paton, R. T. Sprouse and Maurice Moonitz, and Henry Sweeney.²⁴ These authors share a concern for a normative-deductive approach to the construction of an accounting theory and, with the exception of Alexander, a belief that, ideally, income measured using a single valuation base would meet the needs of all users. These researchers are also in complete agreement that current price information is more useful than conventional historical-cost information to users in making economic decisions.

Image of the Subject Matter. To those who adopt the true-income/deductive paradigm, the basic subject matter is (1) the construction of an accounting theory on the basis of logical and normative reasoning and conceptual rigor and (2) a concept of ideal income based on some method other than the historical-cost method. MacNeal argued for an ideal-income concept as follows: "There is one correct definition of profits in an accounting sense. A 'profit' is an increase in net wealth. A 'loss' is a decrease in net wealth. This is an economist's definition. It is terse, obvious, and mathematically demonstrable."²⁵ Alexander, who also argued for an ideal-income concept, stated: "We must find out whether economic income is an ideal from which accounting differs only to the degree that the ideal is practically unattainable, or whether economic income is inappropriate even if it could conveniently be measured."²⁶

Theories. The theories that emerge from the true-income/deductive paradigm present alternatives to the historical-cost accounting system. In general, five theories or schools of thought may be identified:

1. Price-level-adjusted (or current-purchasing power) accounting¹⁷
2. Replacement-cost accounting¹⁸
3. Deprival-value accounting¹⁹
4. Continuously contemporary (net-realizable-value) accounting²⁰
5. Present-value accounting²¹

Each of these theories presents alternative methods of asset valuation and income determination that allegedly overcome the defects of the historical-cost accounting system.

Methods. Those who accept the true-income/deductive paradigm generally employ analytic reasoning to justify the construction of an accounting theory or to argue the advantages of a particular asset-valuation/income-determination model other than historical-cost accounting. Advocates of this paradigm generally proceed from objectives and postulates about the environment to specific methods.

The Decision-Usefulness/Decision-Model Paradigm

Exemplars. The works of W. H. Beaver, J. W. Kennelly, and W. M. Voss and of Robert Sterling may be considered the true exemplars of the decision-usefulness/decision-model paradigm.²² Beaver, Kennelly, and Voss examined the origin of the predictive-ability criterion, its relationship to the facilitation of decision making, and the potential difficulties associated with its implementation. According to the predictive-ability criterion, alternative methods of accounting measurement are evaluated in terms of their ability to predict economic events.

The predictive-ability criterion is presented as a purposive criterion in that accounting data ought to be evaluated in terms of their purpose or use, which is generally accepted in accounting to be the facilitation of decision making. The predictive-ability criterion is assumed to be relevant, even when applied in conjunction with a low specification of the decision model.

Sterling developed criteria to be used in evaluating the various measures of wealth and income. Given the conflicting viewpoints about the objectives of accounting reports, Sterling chose usefulness as the overriding criterion of a measurement method, emphasizing its importance over requirements such as objectivity and verifiability.²³

Due to the diversity of decision makers and the inherent economic and physical impossibility of providing all of the information that users want, Sterling opted for usefulness as the relevant criterion of decision models:

The basis for selection that I prefer is to supply information for rational decision models. The modifier "rational" is defined to mean those decision models that are most likely to allow decision makers to achieve their goals. . . .²⁴ In summary, an accounting system should be designed to provide relevant information to rational

decision models. The accounting system cannot supply all the information desired by all decision makers and, therefore, we must decide to exclude some kinds of information and to include other kinds. Restricting the decision models to rational ones permits the exclusion of a raft of data based on the whims of decision makers. It permits us to concentrate on those models that have been demonstrated to be effective in achieving the decision makers' goal.³⁵

Image of the Subject Matter. To those who adopt the decision-usefulness/decision-model paradigm, the basic subject matter is the usefulness of accounting information to decision models. Information relevant to a decision model or criterion is determined and then implemented by choosing the best accounting alternative. Usefulness to a decision model is equated with relevance to a decision model.

Theories. Two kinds of theories may be included within the decision-usefulness/decision-model paradigm. The first type of theory deals with the different kinds of decision models associated with business decision making: EOQ, PERT, linear-programming, capital budgeting, buy versus lease, make or buy, and so on. The information requirements for most of these decision models are fairly well specified. The second kind of theory deals with the different economic events that may affect a going concern (bankruptcy, takeover, merger, bond ratings, and so on). Theories to link accounting information to these events are still lacking. Developing such theories is the primary objective of those working within the decision-usefulness/decision-model paradigm.

Methods. Those who accept the decision-usefulness/decision-model paradigm tend to rely on empirical techniques to determine the predictive ability of selected items of information. The general approach has been to use discriminant analysis to classify firms into one of several a priori groupings, dependent on a firm's individual financial characteristics.

The Decision-Usefulness/Decision-Maker/Aggregate-Market-Behavior Paradigm

Exemplars. The exemplars of the decision-usefulness/decision-maker/aggregate-market-behavior paradigm are the works of N. J. Gonedes and of Gonedes and Nicholas Dopuch.³⁶ In his pioneering paper, Gonedes extended the interest in decision usefulness from the individual-user response to the aggregate-market response. Arguing that market responses (for example, anticipatory price responses) to accounting numbers should govern the evaluation of the informational content of these numbers and of the procedures used to produce them, Gonedes developed the aggregate-market paradigm, which implies that accounting produces numbers that have informational content dictated by market responses. To the counter-arguments (1) that the procedures used to produce the numbers may induce market inefficiencies and (2) that recipients may be conditioned to respond

to accounting numbers in a particular manner, Gonedes argued that if both cases were true, the opportunity for those who possess this knowledge to earn an abnormal profit would provide a basis for the demise of the market paradigm within the context of an efficient capital market. In their award-winning paper, Gonedes and Dopuch provided a theoretical framework for assessing the desirability and effects of alternative accounting procedures. Their approach relies on the use of prices of (rates of returns on) firms' ownership shares. Gonedes and Dopuch concluded that the price-domain analysis is sufficient for assessing the effects of alternative accounting procedures or regulations but insufficient for assessing the desirability of alternative accounting procedures or regulations. This conclusion is based primarily on one case of market failure in which information of a public-good nature cannot be excluded from nonpurchasers (the free-rider problem). In such a case, the prices of firms' ownership shares cannot be used to assess the desirability of alternative accounting procedures or regulations.

Among the market-failure possibilities is the issue of adverse selection.³⁷ Another is the effect of information on the completeness of markets and efficient risk-sharing arrangements.³⁸ Gonedes and Dopuch also noted that some criticisms of work based on capital-market efficiency, including the works of A. R. Abdel-Khalik and of Robert May and Gary Sundem, treat remarks on assessing effects as if they were remarks on assessing desirability.³⁹

A contemporary piece of work by W. H. Beaver may also be viewed as an exemplar of the decision-usefulness/decision-maker/aggregate-market-behavior paradigm.⁴⁰ Beaver raised the issue of the importance of this relationship between accounting data and security behavior. He argued that it is inconceivable that optimal informational systems for investors can be selected without a knowledge of how accounting data are impounded in prices, because these prices determine wealth and wealth affects the multi-period investment decisions of individuals.

Image of the Subject Matter. To those who adopt the decision-usefulness/decision-maker/aggregate-market-behavior paradigm, the basic subject matter is the aggregate-market response to accounting variables. These authors agree that in general the decision usefulness of accounting variables can be derived from aggregate-market behavior, or as presented by Gonedes and Dopuch, only the effects of alternative accounting procedures or speculations can be assessed from aggregate-market behavior. According to Gonedes and Dopuch, the selection of the accounting-information system is determined by aggregate-market behavior.

Theories. The relationship between aggregate-market behavior and accounting variables is based on the theory of capital-market efficiency. According to this theory, the market for securities is deemed efficient in that (1) market prices "fully reflect" all publicly available information and, by implication, that (2) market prices are unbiased and respond instantaneously

to new information. The theory implies that, on the average, the abnormal return (the return in excess of the equilibrium-expected return) to be earned from employing a set of extant information in conjunction with any trading scheme is zero.⁴¹ Thus any change in the information set will automatically result in a new equilibrium.

Methods. Those who accept the decision-usefulness/decision-maker/aggregate-market-behavior paradigm tend to use a variant of either the two-parameter, asset-pricing model or the dividend (earnings)-capitalization model when they conduct empirical research.⁴²

The Decision-Usefulness/Decision-Maker/ Individual-User Paradigm

Exemplars. The works of J. G. Birnberg and Raghu Nath, of William Bruns, and of T. R. Hofstedt and J. C. Kinard may be considered exemplars of the decision-usefulness/decision-maker/individual-user paradigm.⁴³ Bruns proposed hypotheses that relate the use of accounting information, the relevance of accounting information to decision making, the decision maker's conception of accounting, and other available information to the effect of accounting information on decisions. These hypotheses are also developed in a model that identifies and relates some factors that may determine when decisions are affected by accounting systems and information. Hofstedt and Kinard argued in favor of behavioral accounting research that stems from the realization that an accounting system can be designed to influence behavior. They defined behavioral accounting research as the study of how accounting functions and reports influence the behavior of accountants and nonaccountants. These authors showed that such an endeavor is a proper area of inquiry worthy of research, and they proposed a research strategy.

Birnberg and Nath investigated the implications of behavioral science for managerial accounting and presented examples of how behavioral-science theories may be used to perceive the accounting process and to develop testable hypotheses about it. The principal rationale for this endeavor is that the implementation of accounting techniques depends on human-element responses and on interactions of the individual or group with the accounting system.

Image of the Subject Matter. To those who adopt the decision-usefulness/decision-maker/individual-user paradigm, the basic subject matter is the individual-user response to accounting variables. Advocates of this paradigm argue that in general the decision usefulness of accounting variables may be derived from human behavior. In other words, accounting is viewed as a behavioral process. The objective of behavioral accounting research is to understand, explain, and predict human behavior within an accounting context. This paradigm is of interest to internal and external

difference between the expected payoff of two alternative systems.⁴⁶ Its usefulness is limited to belief revision because it does not include performance evaluation.

The syndicate-theory model includes multiperson firms jointly choosing a set of actions in the presence of a sharing rule for the resulting uncertainty outcome. Exemplars include papers by R. B. Wilson, J. S. Demski and R. J. Swieringa, and Demski.⁴⁷ The situation in this model is explained as follows:

Each individual is interested in maximizing his own expected utility through the choice of the action and the sharing rule. The belief revision demand for information can again be derived. In addition, the choice of the action and the sharing rule will have an important effect on the total risk borne by the Syndicate and how that risk is allocated among its members. Since the sharing rule can be based only on jointly observed information, the Syndicate Theory model can be used to derive the risk-sharing use of information. The motivational use of information is still ignored because all motivational problems are assumed away. In particular, all information is assumed to be publicly available and the action is assumed to be jointly chosen and implemented.⁴⁸

The information-evaluation-decision-maker model keeps the multiperson characteristics and includes an owner or information evaluator delegating the action choice to one or more agents. Exemplars include the paper by Demski and Feltham.⁴⁹ The situation in the model is evaluated as follows:

No model of individual behavior is provided to explain why the firm's agents act in the assumed manner. Assuming rather than deriving the agent's decision rule creates difficulties if the agent is assumed to act contrary to his own best interests. Since these models do not explicitly state the agent's utility function, the reader does not know whether the agent is assumed to act in his own best interest. Therefore, any motivational implications derived from these models are suspect.⁵⁰

The team-theory model includes a multiperson context and a sharing rule as in the syndicate-theory model.⁵¹ The individuals are assumed to act in their own best interests using information only available to them and keeping the welfare of the team in mind. The situation in this model is evaluated as follows:

The problem for the team is to choose the individual decision rule in order to maximize the team's welfare in the presence of decentralized information. Clearly, the belief revision use of information can be derived from the Team Model, but there is no motivational role for information in the Team Model since all individuals are assumed to have the same preferences. Each team member will therefore implement whichever decision rule is given to him. Further, the assumption of identical preferences implies that technological constraints are the only impediments to the full sharing and utilization of the privately acquired information. That is, when informa-

tion can be transmitted in a Team setting, it is assumed to be transmitted honestly. In a more realistic setting, self interest as well as technology may prevent the full and honest communication of information within the firm.³²

The demand-revelation model is similar to the team-theory model with the additional issue of how to induce agents to reveal their private information honestly and to use it to maximize the profits of the organization. Exemplars are provided in the articles by M. Loeb, T. Groves, and Groves and Loeb.³³ The usefulness of the model is achieved by meeting both the belief-revision use and the motivational use.

Models. Those who accept the information/economics paradigm generally employ analytical reasoning based on statistical decision theory and the economic theory of choice. The approach consists of isolating the general relationships and effects of alternative scenarios and applying Bayesian-revision analysis and a cost-benefit criterion to analyze questions of accounting policy. The primary assumption of this approach is rationality.

EMERGING ALTERNATIVE PARADIGMS

Although the competing paradigms examined earlier are still surviving, some of the theories included have started emerging as legitimate paradigms on their own. They include the analytical-agency paradigm, the positive-accounting paradigm, the capital-market-based paradigm, and the behavioral paradigm.

The Analytical-Agency Paradigm

Two types of paradigms characterize the agency paradigm: an analytical or principal-agent paradigm, which is essentially mathematical, and a positive-agency paradigm, which is essentially empirical. The tension between them is evident in the following observations:

... two almost entirely separate and valuable literatures that nominally address the same problem. ... Each of the agency literatures has its strong and weak points, and on occasion a tension has surfaced between them. ... Part is due to the "tyranny of journalism" that develops when mathematically inclined scholars take the attitude that if analytical language is not mathematics, it isn't rigorous, and if a problem cannot be solved with the use of mathematics, the effort should be abandoned. Part is due to the belief that the lack of the use of mathematics in the positive agency literature results in ex post facto theorizing that assumes the hypotheses will not be rejected. ... However, some believe that so little is put in the current principal-agent models that there is little hope of producing results that will explain much of the rich variety of observed contracting practices. ... on the other hand, the methods of the positive agency literature justifiably seem unconstrained, and often perilously close to tautological to some.³⁴

The analytical-agency paradigm traces its origin to the exemplar provided by R. H. Coase's seminal paper, which first referred to the nature of firm and the relationships of principal and agent.⁵⁵ He also put an emphasis on voluntary contracts that arise among various organizational parties as the efficient solution to these conflicts of interest. The analytical-agency paradigm evolved then to a view of the firm as a "nexus of contracts" with the statement by M. C. Jensen and J. W. H. Meckling that firms are "legal fictions which serve as a nexus for a set of contracting relationships among individuals."⁵⁶ E. F. Fama expanded this "nexus of contracts" view to include both capital markets and markets for managerial behavior.⁵⁷

The agency relationship is said to exist when a contract between a person(s), a principal, and another person(s), an agent, to perform more service on the principal's behalf involves a delegation of the decision-making authority to the agent.⁵⁸ Both principal and agent are assumed to be motivated solely by self-interest, that is, to maximize their subjective utility, but also to be aware of their common interests. As Fama noted: "In effect, the firm is viewed as a team of individuals whose members act from self-interest but realize that their destinies depend to some extent on the survival of the team in its competition with other teams."⁵⁹ The agent is striving to maximize the contractual fee he receives subject to the necessary effort levels. The principal is striving to maximize the returns from the use of his resources subject to the fee payable to the agent. These conflicts of interests are assumed to be brought into equilibrium by the agreed-upon contracts. The contracts engage the members to agree to a set of cooperative behavior given implied self-interest motives. Hence "agency research focuses on the design of employment contracts to mitigate the divergence (i.e., conflict) between the cooperative behavior that will maximize the welfare of the individuals and the self-interested behavior that is achievable."⁶⁰ Two reasons may lead to the divergence between self-interest and cooperative behavior, adverse selection and moral hazard, which are information-based problems.

Adverse selection, as an information problem, arises when the agent uses private information that cannot be verified by the principal to implement successfully an input-action rule different from that desired by the principal and thereby rendering the principal incapable of determining if the agent made the appropriate choice.

The moral-hazard problem, as an ex-post-information problem, arises when there are motivational problems and conflicts as a result of basing contracts on imperfect surrogates of behavior. Consider both the case of fire insurance and the problem in the Prisoner's Dilemma. As K. J. Arrow observed, "The outbreak of a fire may be due to a contribution of exogenous circumstances and individual choice, such as carelessness or, in the extreme case, arson. Hence, a fire insurance policy creates an incentive for

an individual to change his behavior and ceases to be a pure insurance against an uncontrollable event."⁶¹ Then, as Stanley Baiman observed:

The problem in the Prisoner's Dilemma presents a moral hazard: Both individuals would be better off if neither confessed. But such behavior is not enforceable because the two prisoners cannot write an enforceable contract between themselves based on their confessing behavior. That is, each individual's action choice is whether to confess or not. But in the Prisoner's Dilemma, the individuals cannot write a contract between themselves which punishes or rewards each based on their respective action choices.⁶²

The basic agency problem is enriched by different options concerning:⁶³

1. The initial distribution of information and beliefs (the basic agency problem assumes that neither individual has private precontract information, that is, one asymmetry of precontract information exists).
2. The description of the number of periods (the basic agency problem assumes a one-period world).
3. The description of the firm's production function in terms of:
 - a. The amount of capital supplied by the principal
 - b. The agent's level of effort, e
 - c. An exogenously determined, uncertain-state realization (weather, machine breakdown, competitors' behavior, and so on, which affects the agent's productivity)
4. The description of the feasible set of actions from which the agent chooses.
5. The description of the labor and capital markets.
6. The description of the feasible set of information system.
7. The description of the legal system that specifies the type of behavior that can be legally enforced and what is admissible evidence.
8. The description of the feasible set of payment schedules (the basic agency model assumes that the principal chooses the payment schedule and the monitoring system to reward and motivate the agent).
9. The description of the solution to the basic agency model. It consists of:
 - i) the employment contract, which incorporates:
 1. the payment schedule for the agent;
 2. the information system choices . . .
 3. specification of how the agent *promises* to act
 - ii) the agent's actual action"⁶⁴
10. The role of self-interest.
11. The solution concept and the nature of optimality.

The Positive-Accounting Paradigm

Nature of the Positive Paradigm. The call for a positive approach to accounting came when M. C. Jensen charged that "research in accounting has been (with one or two notable exceptions) unscientific . . . because the focus of this research has been overwhelmingly normative and definitional."⁶⁵

Jensen then called for "the development of a positive theory of accounting which will explain why accounting is what it is, why accountants do what they do, and what effects these phenomena have on people and resource utilization."⁶⁶ The basic message, later to become known as "the Rochester School of Accounting," is that most accounting theories are unscientific because they are normative and should be replaced by positive theories that explain actual accounting practices in terms of management's voluntary choice of accounting procedures and how the regulated standards have changed over time.

The major thrust of the positive approach to accounting is to explain and predict management's choice of standards by analyzing the costs and benefits of particular financial disclosures in relation to various individuals and to the allocation of resources within the economy. The positive theory is based on the propositions that managers, shareholders, and regulators/politicians are rational and that they attempt to maximize their utility, which is directly related to their compensation and, hence, to their wealth. The choice of an accounting policy by any of these groups rests on a comparison of the relative costs and benefits of alternative accounting procedures in such a way as to maximize their utility. For example, it is hypothesized that management considers the effects of the reported accounting of numbers on taxes regulation, political costs, management compensation, information production costs, and restrictions found in bond-indenture provisions. Similar hypotheses may be related to standard setters, academicians, auditors, and others. In fact, the central idea of the positive approach is to develop hypotheses about factors that influence the world of accounting practices and to test the validity of these hypotheses empirically.

Findings of Positive Research in Accounting. The findings of positive research in accounting are divided between research on the income-smoothing hypothesis and research on positive theories, because different assumptions underlie each type of research.

The Income-Smoothing Hypothesis. *Income smoothing* may be defined as the intentional dampening of fluctuations about some level of earnings that is currently considered to be normal for a firm. The various empirical studies assumed various smoothing objects (operating income or ordinary income), various smoothing instruments (operating expenses, ordinary expenses, or extraordinary items), and various smoothing dimensions (accounting smoothing or "real" smoothing). *Accounting smoothing* affects income through accounting dimensions, namely, smoothing through the occurrence or recognition of events, through allocation over time, and through classification. *Real smoothing* affects income through the intentional changing of the operating decisions and their timing.

In general, two main motivations for smoothing are speculated on in the literature:

1. To enhance the reliability of prediction based on the observed smoothed series of accounting numbers along a trend considered best or normal by management
2. To reduce the uncertainty resulting from the fluctuations of income numbers in general and the reduction of systematic risk in particular by reducing the covariance of the firm's returns with the market returns

Both reasons or motivation result from the need felt by management to neutralize environmental uncertainty and dampen the wide fluctuations in the operating performance of the firm subject to an intermittent cycle of good and bad times. To do so, management may resort to organizational slack behavior, budgeting slack behavior, or risk-avoiding behavior. Each of these behaviors necessitates decisions that affect the incurrence or allocation of discretionary expenses (costs) and result in income smoothing.

In addition to naming these behaviors intended to neutralize environmental uncertainties, it is possible to identify *organizational characterizations*, which differentiate among the extent of smoothing in different firms. Examples include the separation of ownership and control⁶⁷ and the separation of core and periphery sectors.⁶⁸

Positive Theories of the Choices of Accounting Procedures. Unlike the income-smoothing hypothesis, *positive theories* in accounting assume that the stock price depends on cash flows rather than on reported earnings. Furthermore, given an efficient market, two firms with identical cash-flow distributions are valued the same way despite the use of different accounting procedures. The central problem in positive theories is to determine how accounting procedures affect cash flows and, therefore, management's utility functions to obtain an insight into the factors that influence a manager's choice of accounting procedures. Resolution of the problem is guided by the following theoretical assumptions:

1. The *agency theory* may have originated with the emphasis on voluntary contracts that arise among various organizational parties as the efficient solution to these conflicts of interest. The theory evolves to a view of the firm as a "nexus of contracts" with the statement by M. C. Jensen and W. H. Meckling that firms are "legal fictions which serve as a nexus for a set of contracting relationships among individuals."⁶⁹ Fama expanded this "nexus of contracts" view to include both capital markets and markets for managerial labor.⁷⁰

2. Given this "nexus of contracts" perspective of the firm, the *contracting cost theory* views the role of accounting information as the monitoring and enforcing of these contracts to reduce the agency costs of certain conflicts of interest. One possible conflict may be the conflict of interest between bondholders and stockholders of firms with debts outstanding; in such instances, decisions favorable to stockholders are not necessarily in the best interests of bondholders. This may require that lending agreements define

the measurement rules to calculate accounting numbers for the purposes of restrictive covenants. Other possible agreements that may require the use of accounting numbers from audited financial statements to monitor the covenants of the agreements include management-compensation contracts and corporate bylaws. Thus the contracting cost theory assumes that accounting methods are selected as part of the wealth-maximizing process.

Both propositions imply that management is selecting the choice of the optimal accounting procedure for a given purpose. The central problem of the positive approach rests in determining what factors are likely to affect the optimum choice, guided by the assumption of agency and contrasting cost theories.

Three assumptions characterize the positive agency paradigm in developing positive theories of financial accounting, namely, (1) *survival of the efficient*, in that surviving accounting principles will be efficient; (2) *capital market efficiency*, in that the market will not be misled by cosmetic accounting changes; and (3) *nonzero agency costs*, in that accounting members can affect cash flows, in particular via debt contracts, management-compensation flows, and political regulation costs.⁷¹ Given these assumptions of survival of the efficient, capital-market efficiency, and nonzero agency costs, three hypotheses have been used in testable form as follows:

1. *Ceteris Paribus*, the greater a firm's debt-equity ratio, the more likely the firm's equilibrium accountancy procedures will shift expected reported earnings from later periods to earlier periods (the bond covenant hypothesis).
2. *Ceteris Paribus*, the larger the firm (the greater the political costs), the more likely the equilibrium accounting procedures will defer expected reported earnings from the current periods to later periods (the political cost hypothesis).
3. *Ceteris Paribus*, firms with bonus plans are more likely to have accounting procedures which shift expected reported earnings from later periods to earlier periods (the bonus plan hypothesis).⁷²

Evaluation of the Positive Paradigm. The optimism about the few findings of the positive paradigm is not widely shared. A few of the criticisms follow:

1. "Crude," "unsophisticated," or "naive" proxy variables have been used, which casts doubt on the findings of the positive theories of financial accounting. The use of these proxies is due to the lack of better theories. There is consequently a call for developing richer theories. Zimmerman, for example, stated:

There is a symbiotic relationship between theory development and empirical testing. The construction of proxy variables requires a theory, no matter how crude or articulated. The test results then allow the theory to be refined which in turn often

suggests "better" (i.e., less aggregated) proxy variables. Calling for "better specified," "less ad hoc" proxy variables is equivalent to calling for "better" more developed theories because it is the theories that provide the guidance for selection of the proxy variables. The use of "crude," highly aggregate proxy variables does not necessarily imply lax research design but often a paucity of theory. Better theories are, of course, always desirable.⁷³

2. The main limitation to a development of richer positive theories of accounting is due to the lack of well-specified theories of the firm, of capital structure, and of the political process. Ross Watts and Jerold Zimmerman elaborated on this crucial limitation as follows:

The lack of a well developed positive accounting theory results from the lack of rich economic theories of the firm (including the contracting process) and the political process. A richer contracting theory that explained variations in debt contracts and compensation plans across firms and industries would explain the use and nonuse of accounting-based covenants and variations in the accepted accounting procedures. A richer political process theory would enable researchers to use more refined political cost measures than size in studies explaining cross-sectional variations in accounting procedure choice or the stock price effects of accounting standards.⁷⁴

3. To the above limitation, Watts and Zimmerman acknowledged two more limitations:

- a) Specification of the cross-sectional models
- b) Collinearity among the contracting variables.⁷⁵

4. The most striking criticism of the positive approach was based on four points:

- a) The Rochester School's assertion that the kind of "positive" research they are undertaking is a prerequisite for normative accounting theory is based on a confusion of phenomenal domains at the different levels (accounting entities versus accountants) and is mistaken.
- b) The concept of "positive theory" is drawn from an obsolete philosophy of science and is, in any case, a misnomer, because the theories of empirical science make no positive statement of "what is."
- c) Although a theory may be used merely for prediction even if it is known to be false, an explanatory theory of the type sought by the Rochester School, or one that is to be used to test normative proposals, ought not to be known to be false. The method of analysis, which reasons backward from the phenomena to the premises which are acceptable on the basis of independent evidence, is the appropriate method for constructing explanatory theories.
- d) Contrary to the empirical method of subjecting theories to severe attempts to falsify them, the Rochester School introduces ad hoc arguments to excuse the failure of their theories.⁷⁶

Another criticism is based on the argument that positive or empirical theories are also normative and value laden because they usually mask a conservative ideology in their accounting-policy implications.⁷⁷

The Capital-Market-Based Paradigm

Capital Markets and External Accounting. The capital-market-based paradigm favors the adoption of the accounting numbers that have the highest association with market prices. It calls for an evaluation of the usefulness of accounting numbers that are transmitted to capital-market transactors viewed as an aggregate. In this case, *aggregate* means the focus is on the response of the securities market rather than on the individual investors making up the market.

The roles of the securities market and of information in the securities market justify the use of the prediction of market response in the formulation of an accounting theory. The role of the securities market is to provide an orderly exchange market whereby investors may exchange claims to present and future consumption on a continuous basis. The role of the information is twofold: "(1) to aid in establishing a set of security prices, such that there exists an optimal allocation of securities among investors, and (2) to aid the individual investor, who faces a given set of prices, in the selection of an optimal portfolio of securities."⁷⁸ Thus the relevance of accounting information and the choice of accounting-measurement procedures may be examined in terms of market responses. The predictive approach is based on the theory and evidence of the efficient-market model.

The Efficient-Market Model. It is generally assumed that the securities market is efficient. A *perfectly efficient market* is in continuous equilibrium, and thus the intrinsic values of securities vibrate randomly and market prices always equal underlying intrinsic values at every instant in time.⁷⁹ "Intrinsic value" is generally regarded as what the price ought to be and what the price would be given that other individuals possess the same information and competence as the person making the estimate.

The Efficient-Market Hypothesis. By defining the information set in three ways, Fama distinguished three levels of market efficiency: the weak, the semistrong, and the strong forms.⁸⁰

The *weak form* of the efficient-market hypothesis states that the *equilibrium expected returns* (prices) "fully reflect" the sequence of past returns (prices). In other words, historical price and volume data for securities contain no information that may be used to earn a profit superior to a simple "buy-and-hold" strategy. The weak form of the hypothesis began with the theory that price changes follow a true "random walk" (with an expected value of zero). This school of thought is challenged by "technical analysts" or "chartists," who believe that their rules, based on past information, can earn greater-than-normal profits. Filter rules, serial correlation, and

run tests have tested the weak efficient-market hypothesis. The results support the hypothesis, particularly for returns longer than a day.

The *semistrong form* of the efficient-market hypothesis states that the equilibrium expected returns (prices) "fully reflect" all publicly available information. In other words, no trading rule based on available information may be used to earn an excess return. The semistrong form of the hypothesis is relevant to accounting because publicly available information includes financial statements. Tests of the semistrong hypothesis have been concerned with the speed with which prices adjust to specific kinds of events. Some of the events examined were stock splits, announcements of annual earnings, large secondary offerings of common stocks, new issues of stocks, announcements of changes in the discount rate, and stock dividends.

The results again support the efficient-market hypothesis in that prices adjust quickly after the first public announcement of information. But the list of events examined is not exhaustive, and further empirical research is warranted to prove this hypothesis, which is of extreme importance to accounting.

The *strong form* of the efficient-market hypothesis states that the equilibrium expected returns (prices) "fully reflect" all information (not just publicly available information). In other words, no trading rule based on any information, including inside information, may be used to earn an excess return.

Evidence on the strong form of the efficient-market hypothesis is not conclusive.

The Capital-Asset-Pricing Model and the Market Model. The efficient-market hypothesis requires the use of "expected returns" and assumes that securities are properly priced. A theory is needed to specify the relationship between the expected returns and the prices of the individual stock in question. One such theory is W. F. Sharpe, J. Lintner, and J. Mossin's capital-asset-pricing model, which relates asset returns to asset risk as follows:⁸¹

$$E(R_{it}) = R_{ft} + [E(R_{mt}) - R_{ft}]\beta$$

where

$E(R_{it})$ = the expected return of security i in period t

R_{ft} = the return on a riskless asset in period t

$E(R_{mt})$ = the expected return on the market portfolio in period t

$\sigma(R_{it}, R_{mt})$ = the covariance between R_{it} and R_{mt}

$\sigma^2(R_{mt})$ = the variance of the return on the market portfolio

$$\beta = \frac{\sigma(R_{it}, R_{mt})}{\sigma^2(R_{mt})} = \text{risk coefficient}$$

Given certain assumptions, the capital-asset-pricing model asserts that there is a linear relationship between an individual security and its systematic risk.

The capital-asset-pricing model does not lend itself to an easy test of the efficient-market hypothesis. Instead, Harry Markovitz and W. F. Sharpe's market model is used for that purpose.⁴² This model defines the *stochastic process* generating security price as

$$R_{it} = \alpha_i + \beta_i R'_{mt} + \mu_{it}$$

where

$$\begin{aligned} E(\mu_{it}) &= 0 \\ \sigma(R'_{mt}, \mu_{it}) &= 0 \\ \sigma(R'_{mt}, \mu_{jt}) &= 0 \\ R_{it} &= \text{the return of security } i \text{ in period } t \\ \alpha_i, \beta_i &= \text{the intercept and the slope of the linear relationship} \\ &\quad \text{between } R_{it} \text{ and } R'_{mt} \\ R'_{mt} &= \text{the market factor in period } t \\ \mu_{it} &= \text{the stochastic portion of the individualistic component of} \\ &\quad R_{it} \end{aligned}$$

The market model asserts that the return of each security is linearly related to the market return. More specifically, it states that the total return R_{it} can be separated into a systematic component $\beta_i R'_{mt}$, which reflects the extent of common movement of the return of security i in conjunction with the average return on all other securities in the market. The systematic risk β_i reflects the response of security i to economywide events reflected in the market factor, and μ_{it} reflects the response to the class of events having an impact on security i only. Thus the isolation of the individualist component of a security i , or μ_{it} , allows an evaluation of the effect of specific information items or measurements. This model has been used in most studies that evaluate the announcement effect of several types of information items and measurements.

The Information Content of Financial Accounting Numbers. Using theory and evidence regarding the efficient market hypothesis and the methodologies provided mainly by the capital-asset-pricing model, portfolio theory, and the market model, the predictive approach proceeded with the evaluation of accounting numbers and techniques on the basis of capital-market responses. To date, a number of interesting results have been obtained:

1. Various studies reported results consistent with the hypothesis that accounting information—especially earnings—conveys information in the sense of leading to changes in equilibrium prices. Three major results may also be identified.

- a) Security prices respond contemporaneously with the announcement of earnings.
- b) At the time of the announcement, unexpected earnings change (annual or quarterly), and unexpected price changes or returns move in the same direction and with the same magnitude.
- c) There is strong indication of a significantly positive (but small) relationship between unexpected price changes and the strength and magnitude of expected earnings.

2. There are mixed results concerning the information content of the formal annual report and the numbers published therein. The major results are:

- a) No evidence of change in returns or risk has been observed, following the required disclosure of sales; a requirement in 1964 that accounting rules similar to generally accepted accounting principles be imposed on state-chartered banks by the Federal Deposit Insurance Corporation and on insurance companies; the calculation of fully diluted earnings per share; the standardized reporting of the effects of foreign exchange rates resulting from the adoption of the Financial Accounting Standards Board (FASB) Statement No. 8, "Accounting for the Translation of Foreign Currency Transactions and Foreign Currency Financial Statements"; the capitalization of leases on balance sheets following the release of *Accounting Series Release No. 147*; and the disclosure of replacement costs of fixed assets and inventories following the release in 1976 of *Accounting Series Release No. 190*.
- b) A change in returns and risk was observed following the requirement that the effect of lease capitalizations be reflected in earnings; the monthly disclosure of unusual events in a report (8-K) filed ten days after the close of the month; and, to a certain extent, the disclosure of segmental reporting.
- c) Net costs seem to have been imposed on companies that were strongly affected by the foreign currency requirements of FASB Statement No. 8 and companies using full cost accounting that would have had to use successful efforts accounting.

3. Various studies reported results consistent with the hypothesis that information from accounting numbers may be used to form expectations about the systematic risk of a security.

4. No strong evidence of a change in returns or risk was observed following various reporting standards in areas such as changing prices and inflation, social responsibility, sensitive foreign payments, 8-K reports, and audit qualifications.

5. Various studies reported results that were consistent in most cases with the hypothesis that accounting changes had no impact on stock price, given the immediate assumption that investors are able to see through the numbers created by changes in the reporting methods and recognize reality. The various types of changes examined, however, led to different results. One type of change distinguishes between discretionary changes (made and initiated at the discretion of management) and nondiscretionary changes

(mandated by the FASB or the SEC). Another type of change distinguishes between cosmetic changes, discretionary changes with direct cash-flow consequences, and discretionary changes with indirect cash-flow consequences. The results are as follows:

- a) With regard to the impact of alternative accounting techniques assumed to have no direct implications for shareholders' wealth, the market appears to be sophisticated enough not to be fooled by cosmetic accounting differences or accounting changes. These results present an overwhelming evidence against the so-called functional fixation or naive-investor hypothesis and in favor of the efficient-market hypothesis. The functional fixation and naive-investor hypotheses assume that a sufficient number of investors are unable to perceive the cosmetic nature of certain accounting changes or are "fixated" on the bottom figure of net income.
- b) The market appears to interpret mandated accounting changes as having implications for security prices, even though most of these changes are purely cosmetic.
- c) With respect to the market response to accounting changes, which has obvious cash-flow implications (such as the adoption of "last in-first out" (LIFO)), most of the studies, with one exception show a negative market response. In this case, it is very tempting to rely on a naive-investor or a functional-fixation hypothesis as an explanation. As will be suggested later, most of these studies suffer from methodological limitations, and future research may be needed to provide additional insights into the nature of the market response to LIFO adoption.

Various studies analyzed the economic impacts of accounting regulations. Chee W. Chow, in reviewing these studies, distinguished between those aimed at the detection of economic effects and those aimed at testing alternative theories of the reasons for the economic impact.⁴³ Although the accounting regulations do seem to have economic effects, the conflicting results across studies caution against their generalizability and point to the various methodological problems, namely, with regard to (1) predicting the impact of a regulation, (2) selecting and calculating test variables, (3) selecting the period of study, (4) controlling for confounding effects, (5) selecting the sample, and (6) selecting statistical tests.

The testing of alternative theories of how accounting regulations affect wealth was based on hypotheses derived from the agency theory. The argument is that unexpected accounting regulations can alter the costs and nature of existing debt covenants and, through that, the wealth of stockholders and bondholders. The limitations of this line of research are summarized as follows:

Predicted cross-sectional differences in these wealth effects are only partially supported and are not always consistent across studies. Further the included independent variables typically only explain a small (though statistically significant) portion of cross-sectional variations in security returns that are associated with accounting regulations.⁴⁴

Another criticism of the research on the economic consequences of accounting information is that it focuses mostly on stock-market prices, knowing that the stock-price effects are only a small portion of what constitutes economic consequences. With that criticism in mind, Frank Selto and Bruce Neumann outlined a cross-classification scheme of affected individuals and types of economic effects (shown in Exhibit 5.1) that may guide this research away from the stock-price effects.

Evaluation of the Capital-Market-Based Paradigm. The findings identified earlier are not trivial. They have important implications for corporate financial reporting and planning. For example, R. M. Copeland used the empirical evidence on the effect of various accounting changes in efficient capital markets to suggest the following implications for corporate financial reporting and planning:

1. Relevant new information, which will affect the future cash flows of the firm, should be announced as soon as it becomes available, so that shareholders can use it without the (presumably greater) expense of discovering it from alternative resources.
2. The most important information is forward looking. Old news is no news. Shareholders are interested in information that can be presented in the president's letter or in an unaudited section of the annual report—information such as how much new investment is planned, what the expected rate of return is, how long the expected rate will be favorable, how much new equity will be issued, what the firm's target capital structure is, what its plans and policies with respect to repurchasing its own common stock are, and what its dividend policy is.
3. It does not matter whether cash-flow effects are reported in the balance sheet, in the income statement, or in footnotes; the market can evaluate the news as long as it is publicly available, whatever form it may take.
4. The market responds to the cash-flow impact of management decisions, not to the effect on reported earnings per share. Never seek to increase earnings per share if cash flow will decline as a result.
5. The Securities and Exchange Commission should conduct a thorough cost-benefit analysis of all proposed changes in disclosure requirements. It can be aided in its efforts by academic studies, which, in some cases, have already demonstrated that certain types of disclosures are irrelevant.⁴⁵

Above all, most of the evidence cited earlier seems to imply that capital markets are reasonably efficient handlers of accounting information and may be used to evaluate published numbers. This optimism, however, is not generally shared.

First, the efficient-market hypothesis has been contested by N. J. Gonedes and Nicholas Dopuch on the grounds that stock-price associations are not sufficient grounds on which to evaluate alternative information systems and that social-welfare considerations are needed.⁴⁶ More specifically, Gonedes

and Dopuch have identified two assertions used in the predictive approach for the evaluation of alternative accounting procedures:

1. Capital-market efficiency, taken by itself, provides justification for using prices of (or rates of return on) firms' ownership shares in assessing the desirability of alternative accounting procedures or regulations.
2. Capital-market efficiency, taken by itself, provides justification for using prices of (or rates of return on) firms' ownership shares in assessing the effects of alternative accounting procedures or regulations.⁸⁷

Gonedes and Dopuch argued that the contemporary institutional setting allows a free-rider effect that makes the desirability assertion logically invalid, although they consider the effects assertion to be valid.

Second, the efficient-market hypothesis and the empirical evidence supporting it are silent concerning the "optimal" amount of information. This point is particularly recognized in the SEC's *Sommer Report* (after its chairman, Al Sommer, Jr.) as follows:

The "efficient market hypothesis"—which asserts that the current price of a security reflects all publicly available information—even if valid, does not negate the necessity of a mandatory disclosure system. This theory is concerned with how the market reacts to disclosed information and is silent as to the optimum amount of information required or whether that optimum should be achieved on a mandatory or voluntary basis; market forces alone are insufficient to cause all material information to be disclosed.⁸⁸

Third, a qualifier has been omitted in all of the studies cited earlier. The qualifier is whether the firm's decision making is unchanged as a result of the accounting change, because market efficiency may be implied only if both no change in stock prices and the firm's decision making are observed. This point is emphasized as follows: "If the accounting change triggered a revision of the decision making process which would, if extrapolated, alter the anticipated performance of the entity, and if the stock price remained unchanged, then market *inefficiency* would be the conclusion."⁸⁹

Fourth, finding what information is used and should be provided to investors may be difficult. Published numbers are not the only source of information in terms of content and quality, and the task may be too complex for regulators and researchers to solve.⁹⁰

Fifth, most of the empirical research cited suffers from the absence of a theory "to predict who should be better or worse off by accounting policy changes and which changes, if any, might include changes in management behavior to offset the effect of an accounting policy change."⁹¹

Sixth, some major arguments exist against the use of the predictive approach with capital markets. For example, it has been argued that users individually or in aggregate respond because they have been conditioned to

understanding of the behavioral environment of accounting that may serve as a guide in formulating an accounting theory.

Behavioral Effects of Accounting Information. That accounting information, in terms of its content and format, may have an impact on individual decision making, although evident and easily accepted, suggests avenues of research for the improvement of accounting and reporting systems. Accordingly, research studies in this area have examined alternative reporting models and disclosure practices to assess the available choices in terms of relevance and impact on behavior. Because a general theoretical framework has not been established, however, it is difficult to classify these studies. Several writers have attempted to provide classification schemes.⁹⁴ A more recent and exhaustive attempt by T. R. Dyckman, Michael Gibbins, and R. J. Swieringa is used in this section to illustrate the nature of the studies of the behavioral effects of accounting information.⁹⁵

We may divide these studies into five general classes: the adequacy of disclosure, the usefulness of financial statement data, attitudes about corporate reporting practices, materiality judgments, and the decision effects of alternative accounting procedures.

Linguistic Effects of Accounting Data and Techniques. Linguistics and accounting have a great number of similarities. Tribhawan T. Jain, for example, considered accounting rules to be analogous to financial grammar and, based on this analogy, used the effect of grammatical structure on the perceptions of listeners to support the hypothesis that accounting methods affect decision making.⁹⁶ More formally, Ahmed Belkaoui argued that accounting is a language and that according to the "Sapir-Whorf hypothesis," its lexical characteristics and grammatical rules will affect both the linguistic and the nonlinguistic behaviors of users.⁹⁷ Belkaoui introduced four propositions derived from the linguistic-relativity paradigm to integrate conceptually the research findings on the impact of accounting information on the user's behavior:

1. The users that make certain lexical distinctions in accounting are enabled to talk or solve problems that cannot be solved by users that do not.
2. The users that make certain lexical distinctions in accounting are enabled to perform (nonlinguistic) tasks more rapidly or more completely than those users that do not.
3. The users that possess the accounting (grammatical) rules are predisposed to different managerial styles or emphases than those that do not.
4. The accounting techniques may tend to facilitate or render more difficult various (nonlinguistic) managerial behaviors on the part of users.⁹⁸

Functional Fixation. In psychology *functional fixation* refers to a phenomenon of most human behavior: the individual attaches a meaning to a title or an object and is unable to see alternative meanings or uses. In short, the individual fixates on only one function of that object. The application of

respond to accounting data rather than because the data have any informational content. Accordingly, observations of users' responses should not guide the formulation of an accounting theory. Robert Sterling contended that:

If the response of receivers to accounting stimuli is to be taken as evidence that certain kinds of accounting practices are justified, then we must not overlook the possibility that those responses were conditioned. Accounting reports have been issued for a long time, and their issuance has been accompanied by a rather impressive ceremony performed by the managers and accountants who issue them. The receivers are likely to have gained the impression that they ought to react and have noted that others react, and thereby have become conditioned to react.⁹²

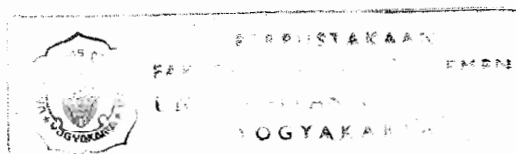
It also may be argued that the recipients of accounting information respond when they should not respond or should not respond the way they do.⁹³

The Behavioral Paradigm

The Nature of the Behavioral Paradigm. A behavioral approach to the formulation of accounting theory emphasizes the relevance to decision making of the information being communicated (*communication-decision orientation*) and the individual and group behavior caused by the communication of the information (*decision-maker orientation*). Accounting is assumed to be action oriented; its purpose is to influence action (behavior) directly through the informational content of the message conveyed and indirectly through the behavior of accountants. Because accounting is considered to be a behavioral process, the behavioral approach to the formulation of an accounting theory applies behavioral science to accounting.

The behavioral approach to the formulation of an accounting theory is concerned with human behavior as it relates to accounting information and problems. In this context, the choice of an accounting technique must be evaluated with reference to the objectives and behavior of the users of financial information.

Although relatively new, the behavioral approach has generated an enthusiasm and a new impetus in accounting research that focuses on the behavioral structure within which accountants function. A new multidisciplinary area in the field of accounting has been conveniently labeled *behavioral accounting*. The basic objective of behavioral accounting is to explain and predict human behavior in all possible accounting contexts. Research studies in behavioral accounting have relied on experimental, field, or correlational techniques. Most studies have made little attempt to formulate a theoretical framework that would support the problems or hypotheses to be tested. Instead, the studies generally have focused on the behavioral effects of accounting information or on the problems of human information processing. The results of these kinds of studies may provide an



functional fixation to accounting began with Yuji Ijiri, R. K. Jaedicke, and K. E. Knight's discussion of the conditions under which a decision maker may be unable to change the decision-making process in response to a change in the underlying accounting process that provided him or her with the data.⁹⁹ They attribute the failure of decisions makers to change their decision-making processes in response to a change in accounting methods to the phenomenon of functional fixation:

Psychologists have found that there appears to be "functional fixation" in most human behavior in which the person attaches a meaning to a title or an object (for example, manufacturing cost) and is unable to see alternative meanings or uses. People intuitively associate a value with an item through past experience and often do not recognize that the value of the item depends, in fact, on the particular moment in time and may be significantly different from what it was in the past. Therefore, when a person is placed in a new situation, he or she views the object or term as it was used previously.¹⁰⁰

In applying this concept to accounting, they extrapolated that "if the outputs from different accounting methods are called by the same name, such as profit, cost, etc., people who do not understand accounting well tend to neglect the fact that alternative methods may have been used to prepare the outputs. In such a case, a change in the accounting process clearly influences the decisions."¹⁰¹

Information Inductance. The behavior of an individual is influenced by information in two ways: through information use when acting as a recipient and through information inductance when acting as a sender. Although the impact on information use is generally known and accepted as part of the stimulus-response paradigm, the more recent phenomenon of information inductance or simple inductance, introduced in accounting by Prem Prakash and Alfred Rappaport, is intended to refer to the complex process whereby the behavior of an individual is affected by the information he or she is required to communicate.¹⁰² Information inductance results from the sender's tendencies to anticipate the possible use of the information, the consequences of such use, and his or her responses to these consequences. As stated by Prakash and Rappaport: "An individual's anticipating the consequences of his or her communication might lead him or her—before any information is communicated and, hence, even before any consequences arise—to choose to alter the information, or his or her behavior, or even his or her objectives. This is the process of information inductance."¹⁰³ Time factors seem to govern inductance as follows:

First, communication of information that is either in fact a description of the information sender's behavior, or is regarded as such by the information sender, or concerning which the information sender has some apprehension that it could be so regarded by the information recipient, will be strongly conducive to information inductance. Secondly, consequences that represent possible feedback effects on the

information sender will be strongly conducive to information inductance. We go on to broadly classify the feedback effects to an information sender as arising from (1) external evaluation of performance, (2) regulation and control of operations, (3) interaction with the decisions of other behavioral units, and (4) changes in the set of choices open to the information sender.¹⁰⁴

Information inductance may be integrated to information use to provide an integrated theory of the impact of information involving both senders and users.

The Human Information-Processing Approach. Interest in human information processing arose from a desire to improve both the information set presented to users of financial data and the ability of users to use the information. Theories and models from human information processing in psychology provide a tool for transforming accounting issues into generic information-processing issues. There are three main components of an information-processing model—input, process, and output. Studies of the information set *input* (or *cues*) focus on the variables that are likely to affect the way people process information for decision making. The variables examined are (1) the scaling characteristics of individual cues (level of measurement, discrete or continuous, deterministic or probabilistic); (2) the statistical properties of the information set (number of cues, distributional characteristics, interrelationship of cues, underlying dimensionality); (3) the informational content or predictive significance (bias, reliability or form of relationship to criterion); (4) the method of presentation (format, sequence, level of aggregation); and (5) the context (physical viewing conditions, instructions, task characteristics, and feedback).

Studies of the *process* component focus on the variables affecting the decision maker, such as characteristics of judgment (personal, task related, human or mechanical, number of judges) and characteristics of decision rules (form, cue usage, stability and heuristics).

Studies of the *output* component focus on variables related to the judgment, prediction, or decision that are likely to affect the way the user processes the information. The variables examined include (1) the qualities of the judgment (accuracy, speed, reliability in terms of consistency, consensus, and convergence, response biases, and predictability) and self-insight (subjective cue usage, perceived decision quality, and perceptions of characteristics of information sets).¹⁰⁵

The varying emphasis on any of the three components of an information-processing model led to the use of four approaches: the lens-model approach, probabilistic judgment, predecisional behavior, and the cognitive-style approach.

Evaluation of the Behavioral Approach. Most of the behavioral accounting research discussed in the preceding sections has attempted to establish generalizations about human behavior in relation to accounting information. The implicit objective of all of these studies is to develop and verify

the behavioral hypotheses relevant to accounting theory—hypotheses on the adequacy of disclosure, the usefulness of financial statement data, attitudes about corporate reporting practices, materiality judgments, the decision effects of alternative accounting procedures, and the components of an information-processing model (input, process, and output). This implicit objective has not yet been reached, however, because most of the experimental and survey research in behavioral accounting suffers from a lack of theoretical and methodological rigor. Studies have examined the use of surrogates in behavioral accounting research without any conclusive results.

Similarly, viewing the experiment as a social contract implies a relationship between the subject and the experimenter. Some aspects of this relationship may threaten the validity of the experiment.

EVALUATION OF ACCOUNTING RESEARCH

Not long ago, accounting within and without the university was viewed with contempt. The situation was described as follows:

I am sure that all of our colleagues look upon accounting as an intruder, a Saul among the prophets, a pariah whose very presence detracts somewhat from the sanctity of the academic walls. It is true that we ourselves speak of the science of accounts, or the art of accounting, even of the philosophy of accounts. But accounting is, alas, only a pseudo-science unrecognized by J. McKeen Cattell; its products are displayed neither in the salon, nor in the national academy; we find it discussed by neither realist, idealist, nor phenomenalist. The humanists look down on us as beings who dabble in the sordid figures of dollars and cents instead of toying with infinities and searching for the illusive soul of things; the scientists and technologists despise us as able only to record rather than to perform deeds.¹⁰⁶

Fortunately, as this chapter has shown, the field bias drastically changed towards becoming a true-fledged "normal science" with competing paradigms striving for dominance. There are, however, some serious limitations.

Institutional Impact

The existence of invisible colleges in accounting is well recognized. Therefore, institutional forces, in terms of an accepted set of laws, habits, customs, or modes of thinking, may dominate accounting research. For one thing, as suggested by M. A. Overington, what is researched depends on the need for consumers and the fixation with a particular method: "Scientific inquiry is characterized by a restriction to issues about which it is possible to secure universal agreement (within a community of scientists) through the application of a method that is likely to evoke unanimous acquiescence."¹⁰⁷ This constrains research to the methods and ideas espoused by more institutions and individuals within those institutions. The

so-called Chicago School and Rochester School may be examples of the constraints created or the new research we find in accounting and the disruptions to true creative endeavors. Paul Williams asked the crucial question: "Is the preeminence of certain schools attributable to the academic quality of the faculties or is it more the result of institutional forces associated with the establishment of a profession?"¹⁰⁸ His results presented evidence of the domination by a few institutions of accounting research. He stated:

Based upon analyses discussed, certain institutional issues affect characteristics of *The Accounting Review*. Because of the relatively small number of repeat authors, no evidence emerged to suggest that any small group dominates authorship. However, evidence emerges that institutional, rather than individual, dominance is present. The institutional effects are partitioned into school of affiliation and school of degree, with school of degree the more salient effect."¹⁰⁹

The Wave of Rigor and Methods

Most of what has been published as accounting research has become very narrow and specialized. Stephen Zeff noticed three trends in accounting research affecting their epistemic quality.¹¹⁰

1. "The 'wave of rigor' that has engulfed the accounting literature since the 1960s has led to lesser inclination to tackle big questions."¹¹¹
2. "So often it seems that manuscripts are the result of methods in search of questions, rather than questions in search of methods."¹¹²
3. "The very proper emphasis on rigor in the application of modern empirical and analytical research methods to accounting questions may endanger the successful [sic] co-existence of classical approaches."¹¹³

The Rhetoric of Inquiry

Accounting research, like any other type of research, may be viewed as a social practice aimed at convincing others of the knowledge status of some findings. This persuasion by language is known as the rhetoric of inquiry. C. Edward Arrington used the rhetoric of inquiry "to point out that accounting research is always normative, that we rely on the tropes of language to tell convincing stories, that we are influenced by concerns other than the classical 'wonderment' and the desire to understand, and that knowledge claims in accounting research are adjudicated politically."¹¹⁴ The use of rhetoric is not unique to accounting research. D. N. McCloskey expressed concern about the tropes that economists use to convince. He stated:

The workaday methods of economic scientists are literary, since the scientific paper is, after all, a literary genre, with an actual author, an implied author, an implied

reader, a history, and a form. When an economist says, as he frequently does, "the demand curve slopes down," he is using the English language, and if he is using it to persuade, as he frequently is, he is a rhetorician, whether he knows—or likes—it or not. A scientific paper—and the assertions within it . . . does literary deeds. . . . scientific assertions are speech acts made in a scene of scientific tradition by the scientist-agent, through the agency of the usual tropes, for purposes of describing nature or making better than the next fellow."¹⁵

Market of Excuses

Accounting research is overwhelmingly destined for accounting journals and an audience and for a great part bought and paid for by large accounting firms. This creates the "unhealthy" situations whereby accounting research is only understood by some academic accountants, it may be of no relevance to nonaccounting audiences, and the findings may be only excuses to the grantors of funds. With regard to the last point, it is suggested that accounting theory is an economic good and that its supply and demand are determined by market forces. The demand for accounting theories is really a demand for "excuses," that is, for special concessions to vested interest groups lobbying for accounting standards that will promote wealth transfers favorable to them. The supply of accounting theories rises to meet the demand and supplies "excuses" that satisfy the demand created by the political process. As a result, all accounting theories may be based on self-interest. Consider the following:

No other theory, no normative theory currently in the accounting literature (for example, current value theories) can explain or will be used to justify all accounting standards, because

- accounting standards are justified using the theory (excuse) of the vested interest group, which is benefited by the standard;
- vested interest groups use different theories (excuses) for different issues; and
- different vested interest groups prevail on different issues.¹⁶

NOTES

1. T. S. Kuhn, *The Structure of Scientific Revolution* (Chicago: University of Chicago Press, 1962 [1st ed.], 1970 [2d ed.]).
2. *Ibid.*, 2d ed., p. 175.
3. *Ibid.*, 1st ed., p. 6.
4. H. Gilman McCann, *Chemistry Transformed: The Paradigmatic Shift from Philogiston to Oxygen* (Norwood, N.J.: Alex Publishing Corporation, 1978), p. 21.
5. *Ibid.*, p. 13.
6. W. O. Hagstrom, *The Scientific Community* (New York: Basic Books, 1965), p. 17.
7. *Ibid.*, p. 13.
8. R. K. Merton, "Priorities in Scientific Discovery: A Chapter in the Sociology