Accounting Historians Journal

Volume 5
Issue 2 *Fall 1978*

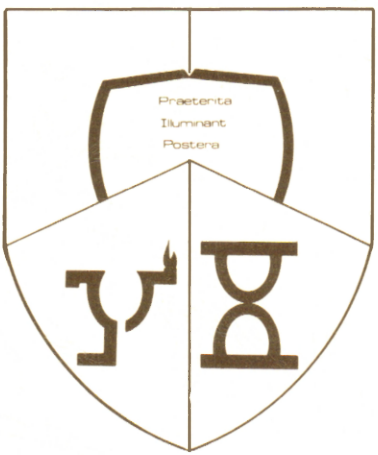
Article 12

1978

Accounting Historians Journal, 1978, Vol. 5, no. 2 [whole issue]

The Accounting Historians Journal

Published by The Academy of Accounting Historians



Fall 1978
Volume 5, No. 2

Research on the Evolution of
Accounting Thought and
Accounting Practice

THE ACCOUNTING HISTORIANS JOURNAL

Manuscripts should be submitted to:

Williard E. Stone
School of Accounting
University of Florida
Gainesville, Florida 32611

All other matters pertaining to the Journal:

Gary John Previts
Drawer H. J.
School of Accountancy
University, Alabama 35486

Annual Subscriptions:

Academy Members: $5.00 per year
Non Members: $7.50 per year

Objectives

The Accounting Historians Journal is a refereed scholarly journal published semiannually (Spring and Fall) by The Academy of Accounting Historians. It is the successor to the quarterly publication *The Accounting Historian* and is numbered as a continuation to maintain the sequence of that series which commenced in January, 1974. *The Accounting Historians Journal* does not assume responsibility for statements of fact or opinion made by its contributors.

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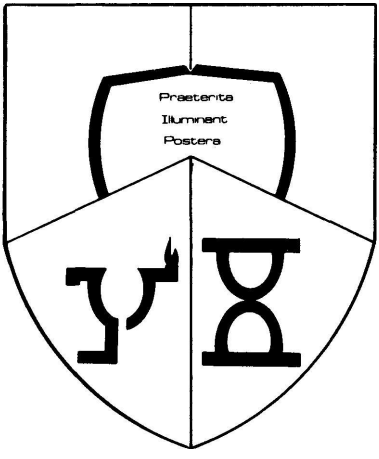

Fall 1978

Volume 5, Number 2

Printed by

The Birmingham Publishing Company

130 South 19th Street

Birmingham, Alabama 35203

THE ACCOUNTING HISTORIANS JOURNAL

Semiannual Publication of The Academy of Accounting Historians

Volume 5, Number 2 **Fall 1978**

CONTENTS

William A. Paton
UNIVERSITY OF MICHIGAN

WANDERING INTO ACCOUNTING—NOTES ON WRITING CAREER

Abstract: After urgent invitations by the editors, W. A. Paton has sent us some recollecions of the circumstances leading to his interest in accounting, and of his experience as a writer in this field. The editors have added a bibliography of his major accounting works, but the list doesn't include data regarding some of the translations mentioned in these reminiscences. Additional information is invited from readers who may be familiar with Paton's writing.

I should perhaps confess, to start with, that I've been interested in writing from boyhood days on, and when I finally undertook college work seriously I still cherished the notion that I might make a success as a short-story writer, stressing the mystic and morbid, in the Poe tradition. This ambition was strengthened, temporarily, when I took a course labeled "the short story" at the University of Michigan in the summer of 1913. This course was given in what was called the "Rhetoric" department in those days, a department stressing advanced English composition. A major requirement of the course was preparation of an original short story, and I still recall how worried I was about this assignment—an anxiety due in part to the fact that I was still an undergraduate and most members of the class (a group of more than 60) were graduate students, including a sprinkling of writers who had already had stories published. Imagine my astonishment when the professor selected my mystic yarn as the best submitted, and read it aloud to the assembled class a few days before the final exam. I was of course elated by this triumph, and walked on air for a day or two. I might add that this old tale appeared in 1976 in the fall issue of *Dividend,* the quarterly magazine of the Graduate School of Business Administration, The University of Michigan.

Fortunately, as I saw it later, my idea of becoming a successful story teller was abandoned shortly. In the fall term (school year, 1913-1914) I happened to elect an advanced course in economic theory taught by Fred M. Taylor. I can say without exaggeration that Professor Taylor was basically responsible for the shift of my

own interest to the field of economics, and I also attribute what success I have achieved as a teacher largely to his influence. A rigorous logician, a master of neoclassical economics, a great teacher—he brought me down to earth, and set my feet on a path which I was happy to follow. Beginning in the fall of 1914, I was one of his group of instructors for the next two years—a great experience.

Accounting Education at Michigan in the 1910's

In those days the program of courses in "business" subjects, with a limited offering in accounting, was included in the "Department of Economics". (The "School of Business Administration" at Michigan was not launched until 1924.) The accounting courses had been passed around, without leadership, and for several years the one-semester beginning course had been taught by a part-time man, who knew a little something about elementary bookkeeping procedure but had no conception of the problems of analysis and valuation involved in financial reporting for managers and investors.

At this point (1912 or 1913, if I recall correctly) Professor David Friday, a very successful teacher in the Department, was put in charge of the work in accounting. He knew little about the subject but was scholarly and capable. If this change had not been made, I doubt if I would ever have developed a strong interest in accounting. Discussing my program with a student friend I was strongly urged to elect Friday's beginning course in accounting, and I finally decided to follow this advice, though with no great enthusiasm. Professor Friday's popularity was such that enrollment in this first course had increased sharply. He lectured to the entire group twice a week, and there were one-hour "quiz" sections as well as afternoon "lab" periods. With the increase in enrollment there was a keen demand for assistants to man the sections. Russell A. Stevenson, my coauthor for several years, was one of Friday's staff.

The textbook hastily selected for the beginning course when Professor Friday took charge was "Accounting and Auditing", by William Morse Cole, and published by Cree Publishing Co. of Minneapolis[1]. It was a bulky volume, as a result of the use of exceptionally thick paper in printing, but aside from size it was not impressive. The arrangement was confusing and the writing uninspiring. The only thing I found of interest was a discussion of "cash discounts", relegated to an appendix, which was not assigned and probably read by very few of us. I should add, in fairness to Professor Cole,

a member of the Harvard faculty, that his later books were much improved over this early effort.

The lab "set" we struggled with was even less satisfactory than the textbook. I believe it was published by "Rowe", a Baltimore firm. The emphasis was on repetitive routine, including—as I learned later—trivial procedures no longer considered good practice. Minimal attention was given to periodic statement preparation. Students were specifically instructed to charge estimated depreciation to "surplus", and we all had a feeling that this was an absurdity. Only old-timers will remember that 1913 was back in the days when courts and commissions were often skeptical of the validity of a regular accrual of depreciation as a charge to operating expense. Opposition to recognition of depreciation as a cost, with the total accrual to date treated as a deduction from property value, was particularly strong among appraisers and influential engineering groups, and accountants were wobbly on the subject.

The bright spot in Professor Friday's course was his lectures. Although in the process of learning something about accounting himself he was well prepared in economic theory, he was interested in business activity (was already becoming known as a consultant), and he realized that day-to-day recording was only the first step in accounting. He ignored the textbook and gave us something to chew on. But I don't believe I would ever have gone further in accounting if it hadn't been for a specific incident that occurred late in the semester. One day our professor came striding onto the platform (he was a short man, and always stood on the platform, in his Prince Albert), with two small volumes in his hand. He was beaming, and held the books aloft. "At last", he said, "I have found some fairly recent writing on accounting worth reading". He then gave us the titles: "The Philosophy of Accounts", by Charles Ezra Sprague, and "Modern Accounting", by Henry Rand Hatfield. Both these books were published in the early 1900s, at about the same time. I might add that Sprague's excellent book, now a classic, has been recently republished by Scholars Book Co. and I was glad to be drafted to write the introduction for this reprinting. A later book by Hatfield has also been republished by this firm.

To get back to my story. Professor Friday had these two books put "on reserve" in the library, and I read them both before the end of the school year. (I'm not sure that any of my classmates did, as the books were always available when I applied.) It was this supplementary reading that stimulated my interest in accounting. Moreover, reading these books made me keenly aware—as time

went on—of the limitations of the textbooks currently available, and thus was one of the prods that encouraged me to try my hand at writing a book for beginning college courses.

The First Paton Text

In the late spring of 1916 I happened to run into my friend Russell Stevenson on the corner of Hill and Oxford streets in Ann Arbor. It was a pleasant day and we stopped to chat. I opened up the subject of the paucity of good textbooks currently available in the field of accounting principles. He agreed, heartily. On the spur of the moment I said: "I've a notion to try my hand at writing a beginning book". "That's a good idea", he replied, "and I'll help you". We pitched in, and in three months had dashed off a considerable stack of manuscript. I worked mostly on the elementary theory side, while Russell dug into the actuarial math (which we both thought budding accountants should know something about), and some of the special topics such as depreciation. We also prepared our first problem book, including a lengthy exercise as a practice set. This first edition of our "Principles of Accounting" was published by Ann Arbor Press in the early fall of 1916. It was a neat, cloth-bound book, well printed on good paper but a hasty job, not without limitations (including lack of an index). Under the circumstances, however, I feel we did well, and this first effort set a pattern for the more substantial editions that followed.

A second edition of this text was published by George Wahr in Ann Arbor in 1917.[2] One feature of this expanded book was the addition of extensive interest tables.

In 1918 our revised principles was published by Macmillan, in impressive red and gold binding, but our sales were modest. Roy Kester's book came out at about the same time. He got most of the sales but we got the good reviews. "Principles" went through several printings, with corrections and minor changes. We prepared accompanying problem books, with guides and solutions for teachers, printed by an Ann Arbor firm, under Macmillan auspices. I worked very hard on these problem materials and I still think they were the best available in those days. In our "sets" and problems we minimized the routine of initial recording and stressed periodic analysis, valuation, and reporting. And we didn't use the corner grocery store as the major example of business enterprise. We focused attention on the corporate form of organization, with examples of problems from mining, manufacturing, construction, and

other fields of activity. I'm still rather proud of the problems, cases, and sets that we developed, though it was hard to find time to do the polishing that is always needed.

In 1923 the Paton and Stevenson team broke up and we went our separate ways. In 1924 Macmillan published my first book without a coauthor, under the title "Accounting".

I should interpolate here that I completed my doctoral dissertation and was awarded the Ph.D. at Michigan in 1917. My subject was "Accounting Theory—with special reference to the corporate form of organization". I leaned heavily on Sprague as a starting point. I might also mention that my first article on accounting appeared in the January 1917 issue of the *Journal of Accountancy.*

"Accounting Theory" and "Essentials"

In 1922 Ronald Press published my "Accounting Theory", a revision of my dissertation plus material based on a half-dozen of my articles on special topics. This 500-page book was republished in 1962 by Accounting Studies Press, Ltd., with a lengthy introduction by my former student, and long-time friend and colleague, Herb Taggart. More recently another reprinting has appeared, issued by Scholars Book Co. I might add that I have in my files a tattered copy of an early Chinese translation of this book, printed on very flimsy paper.

According to my files the first edition of "Essentials of Accounting" was published in 1938 (Macmillan). This was substantially a new book, and—in my judgment—much superior to "Principles of Accounting". One feature of this book was the inclusion of reproductions of many business forms, but I'm not sure this was worthwhile. Skeleton entries and T accounts, plus statements and schedules, remain a good means of providing students with illustrative material. There were a number of printings of this book without substantial changes, but the edition of 1949 was a rigorous revision.

My publisher achieved a small triumph in the early 1940's when it sold a special printing of the "Essentials" (75,000 copies or more, I believe), for use by the "armed forces". This was a paperbound book, delivered at a bargain price, and I waived my right to royalties on this printing. Talking with a prominent CPA recently, not a student of mine but a good friend and supporter, I was surprised to learn that his favorable opinion of my work began with reading a copy of this printing while he was in the U.S. Navy.

"Essentials" has had a longer history than any of my other textbooks. In 1958 the book was again revised, with R. L. Dixon listed as coauthor. This edition achieved the distinction of being translated into Turkish (I'm not sure this is the right word). I have a copy of this impressive book, appearing in 1964. On the title page I find the following: MUHASEBENIN TEMELLERI (Essentials of Accounting). In the last edition (1968), now reported to be out of print, I withdrew my name as author although I did prepare the problems at chapter ends, and the solutions for these problems. The listed authors for this edition, and the accompanying problem book, are Dixon, Hepworth and Paton (my son and namesake).

Accountant's Handbook

Back in the early 1930s I allowed my missionary zeal to induce me to tackle the job of redoing the "Accountant's Handbook" for Ronald Press. This proved to be a much bigger chore than I anticipated. After a quick scanning, I never even opened the original book, but went ahead on my own, following an entirely new outline. As a result I found myself doing about 60% of the actual writing, including selecting and adapting hundreds of references (after obtaining consent of authors and publishers). I also found it necessary to rewrite much of the material submitted by assistants (especially sections done by people recommended by the publisher).

Despite this strenuous experience I accepted the task of editing the next (1943) edition. This was a less burdensome chore, but still required a lot of time and energy. These "Handbook" jobs did give me an opportunity to spread the Paton gospel more widely, and I was pleased when a Spanish translation, done by my good friend Roberto Casas Alatriste, was published. But if I had my life to live again I would devote the time spent on the "Handbook" to less tiring and more profitable activities.

Advanced Accounting and Successor Books

In 1941 Macmillan published my "Advanced Accounting", with accompanying problem book and manual of solutions for teachers. Again my sales were rather small, although there were some adoptions. Somewhat later I began pondering the possibility of writing two books for the advanced field, one stressing "Assets" and the other dealing with problems relating especially to the "Equities" side of the balance sheet ("statement of financial position" was the term I had adopted by then). I wrote two books, had them printed

in preliminary form, and used them for a year or two in my classes. I haven't saved copies, and can't recall the exact titles, dates and other details.

On my office shelves is a set of four large volumes I had almost forgotten. They were printed in Spanish in Buenos Aires in 1962. The first two are a translation of "Essentials of Accounting" and the other two are a translation of my "Advanced Accounting", published back in 1941. I don't recall the circumstances under which these books were published, and am not sure I ever had any information on the subject.

After considerable consultation with Macmillan management in the late 1940s I started work on two substantially new books, "Asset Accounting", and "Corporations Accounts and Statements". The first was published in 1952 and the second in 1955. My son assisted me with these projects, especially in connection with the accompanying problem books and manuals for teachers, and is listed as coauthor. Many years later we rewrote "Asset Accounting" completely, and published this revised book with the title "Assets—Accounting and Administration", but the 1955 book has never been materially changed. In 1969 an abridged paperback of *Corporation Accounts and Statements* was published, consisting of sixteen selected chapters of the old book.

Comments on Other Writing

I find that my files of problem books prepared over the years to accompany my textbooks are far from complete, and I won't attempt to give details regarding these materials. I should note, however, that in some cases I received substantial help from younger colleagues, including R. P. Briggs, L. L. Laing, Rufus Wixon, R. H. Cojeen.

Aside from many articles and monographs my writing that might be classed as in accounting has not been confined to textbooks. I'll mention three special publications. In 1934 I made a study for the "National Bureau of Economic Research", with the cooperation of several major accounting firms, and the results were published in 1935 under the title "Corporate Profits as Shown by Audit Reports", a hard-cover volume of 150 pages. In 1940 "An Introduction to Corporate Accounting Standards" (Paton and Littleton) was published by the American Accounting Association, and is still in print. In 1965 my "Corporate Profits—Measurement, Reporting, Distribution, Taxation" appeared, a slender volume of 124 pages published

by Irwin (in the Dow-Irwin series). This book is now out of print in this country, but a Japanese translation has recently appeared.

I have done considerable writing on economics over the years but won't attempt to discuss this material in these recollections. I have been accused of including too much of my thinking on economics and finance in my books and articles ostensibly written for the accounting field. Occasionally I've dabbled with subjects outside my major fields. My 1962 article "On Going Underground", a pioneer study of this subject, brought me more attention and acclaim, in major newspapers, than all my other writing put together.

Advice for Young Authors

I'll conclude these reminiscences with some tips for today's writers of textbooks on accounting. In the first place, don't overlook the importance of becoming acquainted with business problems and what is going on in accounting practice. Especially when one is expressing views that are at odds with prevailing concepts and procedures, you will find that students and other readers are more favorably impressed when it is evident that the writer is broadly informed, and up-to-date. Don't neglect opportunities for practical experience in the vacation periods available to college teachers. I have been very fortunate in this respect. In the summer of 1914 I assisted Professor Friday in making the accounting studies of the operations of several electric power companies, as part of a valuation proceeding, work that required close examination of company records. And from about 1920 on, for more than 50 years, I had many consulting engagements dealing with income determination, valuation of intangibles, joint-cost allocation, impact of inflation on depreciation and other financial measurements, and other special topics. This experience has been invaluable to me as a writer and teacher.

Second, don't be satisfied with compiling published rules and regulations issued by governmental or professional bodies. Don't bend the knee to the rule makers, who seem bent on putting us into a strait jacket. If accounting is to remain an interesting and vital field it must be left open for the exercise of judgment and unhampered analysis, in the light of the real problems of managers and investors (including the creditors, who are also capital suppliers). And don't fret unduly about that elusive "public interest" we hear so much about. The "public" doesn't engage the accountant, or pay his salary or fee.

Finally, I think a word of warning is needed with regard to the preoccupation of some writers and teachers these days with fine-spun mathematical models and hair-splitting analyses. I am not an antimath crusader—far from it. But at times it seems as if these "experts" are indulging in wheel-spinning antics, off in outer space, with no recognizable bearing on practical business management and decision-making.

FOOTNOTES

[1]A 1915 edition of Cole's book was published by Homestudy Publishing Co. of Chicago.

[2]A long-time close friend of mine, Williard Stone, has an odd hobby: collecting my books on accounting. What started him on this quest I can't say, but I do know that he has been persistent, and recently ran down a copy of the 1917 edition of "Principles of Accounting" (Paton and Stevenson), published by George Wahr of Ann Arbor. And when he learned that I didn't have a copy of this early edition in my files he generously insisted on giving his find to me.

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Shahid L. Ansari
UNIVERSITY OF CALIFORNIA, LOS ANGELES

Diana T. Flamholtz
LOYOLA MARYMOUNT UNIVERSITY

MANAGEMENT SCIENCE AND THE DEVELOPMENT OF HUMAN RESOURCE ACCOUNTING*

Abstract: A common misconception about human resource accounting (HRA) is that it focuses narrowly upon financial accounting, that its purpose is to reflect the asset value of people on financial statements. The major purpose of HRA is to provide concepts and measurements to facilitate the effective and efficient management of human resources. It, therefore, represents a management accounting development.

Management science has played an important role in facilitating the development of human resource accounting as a managerial tool. The theories underlying HRA are derived from and consistent with the concepts and philosophy of management science developed after WW II. The rationality and multidisciplinary problem solving approaches which characterize management science were applied to HRA and together with other economic and social factors of the 1960's produced human resource accounting.*

Accounting history has, for the most part, dealt largely with the earlier development of the discipline. It has thus focused on bookkeeping and accounting as it evolved from its beginnings in Europe. Less has been done to interpret, and to put into proper historical perspective, more contemporary developments in accounting. While it is recognized that earlier accounting developments grew out of societal needs and reflect the state of general development of contemporary societies, many recent developments are not recognized as representing the outcome of similar forces. This is important because those who use and shape accounting must anticipate the impact of societal changes upon accounting—particularly in the period of rapid change we find ourselves in today.

The twentieth century has been marked by the recognition of management accounting as a major branch in accounting. This evolution was greatly influenced by the developments in "manage-

*Our thanks to the following people who provided us information useful in writing this paper: R. Lee Brummet, C. West Churchman, Eric Flamholtz, Paul Kircher, R. O. Mason, Wm. Pyle, Burt Swanson.

ment science thought" that took place during this same period.

The purpose of this paper is to trace the influence of management science thinking on the development of "human resource accounting" (HRA). The contribution of management science thought to HRA's development was at two levels. First, at a philosophical level, the basic tenets of HRA are consistent with and grow out of the fundamental notions of management science. Second, at a methodological level, the development of HRA is based on basic methods of management scientists.

Management science did not bring HRA into being, but it was one of the most important factors in its rapid growth and development. The basic premise of HRA—that people are valuable organizational resources whose measurement is needed to judge how well they are utilized—has been long recognized, but it was the application of management science thought that has elevated HRA to its current status as a viable and useful management tool.

The emphasis upon management science thinking is in no way intended to lessen the importance of other factors which were responsible for the development of HRA. For example, the need for the acceptance of HRA in the last decade may have a great deal to do with the general shift in the U.S. economy toward more people oriented enterprises which, having more sophisticated production technologies, need better qualified people. Research and examination of these aspects we leave to a compilation of a comprehensive history of HRA. The relationship between management science and HRA is an example of another important contemporary development—the transplantation of ideas across disciplines.

This paper is divided into three parts. The first part describes the main features of management science thinking including not only a discussion of current thought, but also a description of its evolution over the years. The second part describes the field of HRA and how management science thinking, as described in the previous section, helped shape its key characteristics. The final segment of this paper will be devoted to a discussion of what this history portends for the future.

I—What is Management Science Thinking?

The ideas and attitudes associated with the term management science (MS) are not easy to describe since the bounds of the subject have been, and still are, the subject of much debate. In recent years, the literature of management science has been concerned with abstruse theorems and complex mathematical treatises on op-

erational problems such as inventory control, production scheduling, etc. However, there is a broader conception of MS thinking which regards MS as an attempt to practice "science-based" management. It therefore encompasses all efforts designed to substitute the "art" of managing with a "science" of managing.

A. MS Thinking up to World War II

Historically, science and scientists in management were first used in the area of military operations. One of the earliest such uses is attributed to the Greeks who employed Archimedes to solve a naval problem. His reported success against the Roman fleet encouraged greater use of scientific talents for military enterprises right down to modern times. Today all armed forces throughout the world employ regular scientific talent pools for solving operational problems.

It was the industrial revolution which first focused attention on the need for science-based management in industry, as well. According to Smiddy and Lionel, there was a lot of talk about a "science of management" during the nineteenth century. Nothing much came out of it, however, since "those who created the industrial revolution were interested in changing the world they had brought into being."[1] There was, therefore, little movement in the direction of MS application to industry.

The first industrial application and the modern beginning of science-based management is generally attributed to Frederick Taylor.[2] By training, Taylor was an engineer who believed in measurement and controlled experiments—thus his famous time and motion studies. Philosophically, he was closer to the tradition of scientific induction characterized by its adherence to a holistic view of the world. He therefore used experimentation and measurement to search for underlying principles governing the operation of industrial processes. The resulting principles of scientific management made an important contribution by introducing experimentation and statistical analysis as useful managerial aids.

The influence of the holistic view was reflected in Taylor's attempt to include both men and machines in his studies. He believed that scientific management would help reduce exploitation of employees by employers through a better redistribution of wealth. He also believed that the utilization of an employee's full potential for greater output would lead to a happier work group. This philosophy was clearly dominant in the work of Frank and Lilian Gilbreth who, because they were engineer and psychologist respectively, focused their time and motion studies on man-machine systems.

After World War I, the scientific management movement was at its zenith. It was being taught, conducted, and preached by the many followers of Taylor who had formed a Taylor society.[3] Their enthusiasm, however, was confined to time and motion studies and other kinds of work measurements. A weakness of this excessive attention to work measurements was the lack of attention to the human factor. Employees were treated as extensions of machines rather than as individuals in their own rights. The result was a split between those who regarded management as a technical problem and those who felt that it was primarily a motivational problem.

Figure 1 labels the two sides of this argument as the "technical" and "humanistic" approaches to management. The technical side was primarily engaged in improving work methods and its arena was the production job shop. This trend was dominant up to World War II. The humanistic opposition to Taylor's followers grew out of the now famous "Hawthorne experiments." The plant sociologists who conducted these experiments founded the so-called "human relations school," which regarded human motivation as the dominant managerial problem.[4]

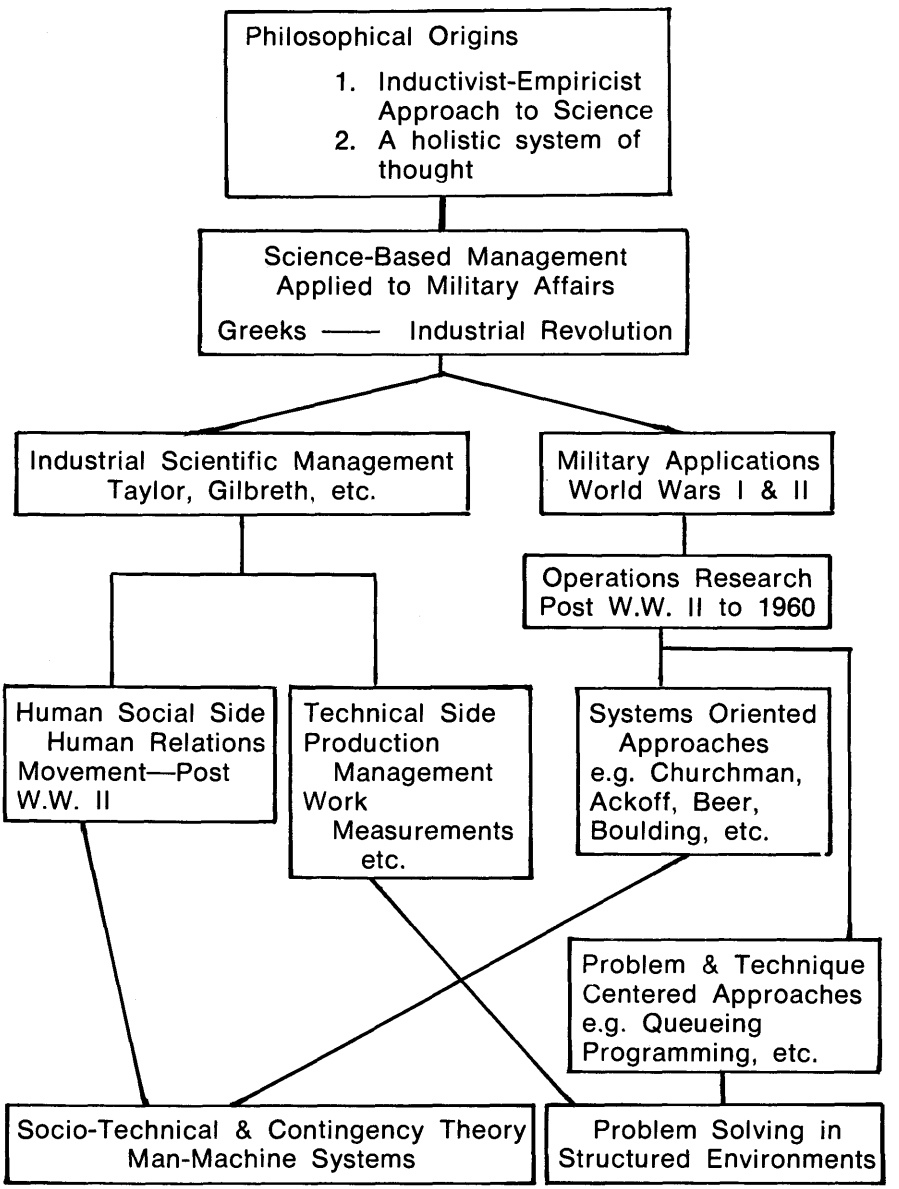
The human-relations perspective was in many respects the antithesis of the doctrine preached by Taylor's followers. As opposed to technical determinants, the human relationists believed that social factors played a greater role in affecting worker performance. While Taylor had emphasized economic rewards, they emphasized social rewards. In fact, if we may be permitted an extreme statement, Taylor's manager was an engineer; the human relations manager was a psychiatrist.

It is interesting to note that despite vast differences in philosophy, both these approaches shared a common methodological heritage—the inductivist-empiricist tradition in science. The so-called "Hawthorne effect" reinforced the belief of many who maintained that the early principles of scientific induction had to be modified to recognize that the process of measurement alters the phenomena being measured. As in Taylor's work, controlled experimentation and measurement were central to human-relations research.

With the advent of World War II, military management became dominant. Scientists were recruited on both sides of the Atlantic to aid in the war effort. The earliest and best known such group was the operational research group under Professor Blackett in the United Kingdom.[5] This group, dubbed "Blackett's circus" was immensely successful in solving several operational problems for the Army, Navy, and the Air Force. Its success spawned the formation

FIGURE I

Evolution of Management Science Thought



of other groups and its extension into other areas, most notably intelligence. Here, too, there were spectacular successes such as the breaking of the Japanese and German codes.

The operational research methods developed during the war made two key contributions to the development of MS thinking as we know it today.

First, they brought back into sharper focus the holistic tradition which had been fragmented by the development of the technical and humanistic approaches to management. This resulted from the use of interdisciplinary research teams to focus on all pertinent aspects of a problem. As Trefethen stated:

> . . . it broadened the point of view from which problems were approached. Whereas the time-and-motion study treated both the machines and operators as mechanical components of the total complex and attempted to make measurements as though both were equally predictable, the psychologists on an operations research team faced with a similar problem, would add such variables as motivation and morale to the factors for consideration.[6]

Second, because the OR teams were dominated by mathematicians and physicists, they demonstrated that "mathematical solutions could be attained for extremely complex problems."[7] The idea of model building, especially in mathematical forms, became an accepted MS methodology. After World War II this concept was applied to industrial problems.

B. MS Thinking After World War II

Immediately after the war, when attention shifted back to industrial problems, operations research was regarded by many as the essence of management science thinking. OR during this period was defined and accepted as a system of thought. For instance, Solandt defined operations research as "a point of view or method of approach to the study of the operation or functioning of a complex organization."[8] In a similar vein, Kendall called OR "a branch of philosophy, as an attitude of mind towards the relation between man and environment; and as a body of methods for the solution of problems which arise in that relationship."[9]

The strongest statement about the philosophy and methodology of OR during this period is by Beer. According to him, "operational research is not a science, for it is not *about* anything; it *is* science."[10] Beer went on to state that the method of science was in-

duction. OR represented a newer form of this methodology resulting from a revision of the principles of nineteenth century induction. These principles, which were based on a stationary world, had been replaced by counterparts more appropriate to an analysis of a dynamic and rapidly changing world. Thus, to him "operational research is that subset of scientific methods which is appropriate to the analysis of activity."[11]

At this stage, management science thinking, as represented by OR, had the following characteristics:

(1) A holistic approach that focused on all aspects of a problem;
(2) The bringing together or synthesis of interdisciplinary specialists and special knowledge in problem solving.

While these characteristics were widely shared, they were by no means universal. Very early in the post war application of OR, differences began to emerge between what McCloskey termed the "purists" and the "functionalists."[12] The purists were initially centered in U.K. and subscribed to the belief, held by Professor Blackett, that OR was an activity suited for physical scientists and mathematicians. If an occasional social scientist was needed on a project, he was used as a consultant and was not an integral part of the activity. On the other side of the Atlantic, the Operations Research Society of America (ORSA) was their primary organization.

The functionalists were more interdisciplinary and regarded mathematics merely as the language of OR. These individuals were affiliated with several major universities in the United States. One group, comprised of academics at UCLA and managers from Hughes Aircraft, held organizational meetings which led to the formation of *The Institute of Management Sciences* (TIMS). This group believed that OR was more problem centered than technique centered. Swan states their position as follows: ". . . the problem must be the central focus and that it must be attacked by such tools and techniques as are appropriate no matter what the training of the possessors of these tools and techniques."[13]

The founders of *The Institute of Management Sciences* and its journal *Management Science* (whose first editor was Professor C. West Churchman of Case), were more inclined toward this broader functional view of management science. They were interested in bringing scientist and manager together, instead of being an exclusive professional society of the type exemplified by ORSA. A quick sampling of the earlier issues of the journal shows many interdisciplinary, practice-oriented contributions from marketing, ac-

counting, finance, etc. In addition, there were appeals to broaden the scope of OR to nonoperational problems. For instance, some thought OR methodology might be usefully applied to problems such as economic development, city planning, etc.

By the late 1950's management science in the U.S. came to be dominated by the purists. The content of the journal *Management Science* reflected a greater proportion of more mathematically stated solutions to operational problems such as queueing, scheduling, etc. It is difficult to speculate on the reasons for this trend. Our guess is that it was in part a reflection of the difficulty of applying OR to "messy" nonoperational problems, and in part due to the greater successes achieved in solving problems more amenable to mathematical solutions.

The 1960's saw some move away from operational problems into other areas. These attempts, however, were still highly mathematical and dealt largely with problems in relatively structured environments. Consequently, they were also less practice-oriented. There were signs of dissatisfaction with the major emphasis on mathematics. For example, in a recent TIMS meeting, Professor Starr, the present editor of the journal, presented a history of OR-MS publications. On a scale from "really readable" to "really mathematical" he assessed the journal's emphasis to be closer to the "mathematical" scale while most of the readers desired emphasis to be closer to the "readable" scale.[14] He felt that future issues would be less mathematical and more readable. It is not clear whether this will be accompanied by a shift to the original functional position of dealing with broader and less structured problems.

During the same period the work of those in the humanistic tradition in science based management—the earlier defectors from this greater operations orientation—continued along the same lines as before. Despite its earlier emphasis on inter-disciplinary problem solving, the OR-MS people did not attract many human relationists to their camp. Their adoption of inter-disciplinary approaches came later in the 1960's. It resulted from a recognition that the prescriptions of this movement, although well intentioned, did not provide a panacea for managerial problem solving. Human relations began to branch into psychology of individuals, work conditions, and other situational factors not previously considered by the plant sociologists.

There were still researchers in this area, however, who believed there was a one best management style for all situations. As late as 1965, Rensis Likert and his colleagues were searching for management styles which would provide "the answer." Likert's contri-

butions are especially important to our thesis and we will have more to say about it later. The enlargement of factors to be considered in dealing with employee motivation caused people to take a more conditional or "contingent" view of the problem. Instead of searching for a one best way, the emphasis was now upon the set of factors whose combination would yield best results.[15]

By the late 1960's an interesting situation had developed. Those in the humanistic mold had begun to appreciate the importance of technical or operational factors in their efforts. They were once again receptive to the original ideas of Taylor, Gilbreth and others for focusing on man-machine systems. On the other side, the functionalists in OR, who were less than totally enthusiastic about the purist trend, were looking for more complex and ill-structured problems to demonstrate the power of MS thinking—both at a conceptual and practicel level. The time seemed right for some sort of a merger between these groups. What was needed was a catalyst.

Such a catalyst appeared in the form of systems theory. Two versions of this theory have been particularly instrumental in shaping scientific thought. The first, called the "general systems theory" (GST), was chiefly developed by Von Bertalanffy. It took an organic view of systems and was a move away from the more static laws of physics which had been dominant until then. The other, "cybernetics," was developed by Norbert Wiener and took a more mechanical communication and control orientation.[16] Despite their differences, both forced researchers to look anew at the problem of connected wholes and to take into account more complex dynamic relationships.

During the 1950's and 1960's GST and cybernetics had slowly grown in importance. Many ready converts from the rank of all three groups—the humanists, the OR purists and the OR functionalists were found. This was hardly surprising since all these groups were based originally in the holist tradition. Systems theory provided a neat conceptual framework for many of their existing beliefs and, in addition, offered a promise for synthesis that had eluded them in the past. This was most prominently noted by Boulding who saw GST as a "skeleton" for the unification of all science.[17]

While it is too early to see if Boulding's hope will come to fruition, the systems approach has succeeded in moving toward a synthesis between the technical and humanistic sides of management. This has come about in the form of socio-technical systems theory whose central thesis is the discovery of mutually supportive techni-

cal and social systems in the work place.[18] It thus views the *interaction* between technology and social systems as the central fact of management systems.

In the last decade the functionalists have made the precepts of systems theory central to management science. Professor Churchman is one of the leading figures in this latest move. As Churchman states, the management scientist today thinks of his approach as the "systems approach." He describes this as an interest in "characterizing the nature of the system in such a way that the decision making could take place in a logical and coherent fashion and that none of the fallacies of narrow-minded thinking would occur."[19]

What has the systems approach contributed to management science thinking? We have already indicated the synthesis of technical and social systems approaches to management made possible by systems thinking. The other major contribution of the systems approach is that it has made the management scientist aware of the central role of information systems and resource measurement for their work. This is perhaps best stated by Churchman:

> For a management scientist, the systems approach entails the construction of "management informations systems" that will record the relevant information for decision-making purposes and specifically will tell the richest story about the use of resources, . . . not only to existing resources but also to the manner in which resources can be increased . . . by means of research and development in the case of hardware types of equipment, or by training and education of personnel.[20]

This does not mean that early OR-MS efforts were oblivious to the need for measurement and information, not currently available, in order to implement some of the models developed for operational problems. In fact, the field of "managerial accounting" come into existence partially as a response to this challenge. It was fairly successful in providing information useful for estimating paramenters of OR models such as inventory, replacement, queueing, etc.[21] The information systems, however, were highly structured just as the problems being solved were highly structured. What was missing, therefore, was information which was suited to the "messy" and unstructured policy problems which management scientists had begun to attack in the late 1960's.

Another difference in information currently available and information needed by management scientists was noted by Churchman. He pointed out that the orientation of the systems approach was on

missions (problems) rather than organizational units. According to him, "The managerial accountant wants to generate 'scores' of departmental performance, or 'cost centers' which can be examined for their utilization of resources."[22] While this may have been too harsh an indictment of the managerial accountant, his criticism that he (the accountant) is department-oriented rather than mission-oriented is legitimate.

The adoption of the systems approach by the management scientist, therefore, has shifted attention from measurement for structured problems and measurement of tangible resources to more difficult measurement problems. In fact, it may not be wrong to characterize present day management science thinking as seeking to design better information systems and to attempt to measure variables previously considered unmeasurable. This fact is particularly relevant in the case of HRA as we shall see in the next section.

To summarize, this section has traced the evolution of management science thinking from its early beginning in military operations to modern times. The key characteristics of present day MS thinking not necessarily reflected in any one publication, may be summarized as:

(1) An adherence to a holistic system of thought which is currently expressed in the precepts of general systems theory;
(2) Implementing the holistic approach through interdisciplinary problem-solving;
(3) A belief in induction as the method of science;
(4) Observation, experimentation and measurement as the cornerstone of induction;
(5) Measurement of resources—past, present and future—as one of the key elements of information systems; and
(6) Information systems as central determinants of managerial success in decision-making in complex unstructured environments.

II—Management Science and the Development of Human Resource Accounting

A. Early Work in Human Resource Accounting

The distinctive features of MS thinking must now be related to the development of human resource accounting. The emergence of hu-

man resource accounting (HRA) at the broadest level was a reflection of basic changes in the economy following World War II. Growth in service oriented industries led to changes in the composition of the labor force with increased emphasis on white collar and technical employees. Greater investment in human resources followed, and by the 1950's a group of economists based in New York and Chicago had begun to examine the question from several perspectives.

In New York, particularly at the National Bureau of Economic Research, economists dealt with the investment in human capital in terms of education, health services, changes in productivity, and income differentials.[23] At the University of Chicago, Milton Friedman, Theodore Schultz, and others were involved with similar questions. Schultz, in particular, became known for his work on investments in education and for his Presidential Address given to the Seventy-Third Annual Meeting of the American Economic Association in 1960. In that speech, which had great visibility, Schultz argued that:

> Although it is obvious that people acquire useful skills and knowledge, it is not obvious that these skills and knowledge are a form of capital, that this capital is in substantial part a product of deliberate investment, that it has grown in Western societies at a much faster rate than conventional (nonhuman) capital, and that its growth may well be the most distinctive feature of the economic system.[24]

The viewpoint of Schultz and other human capital economists did not have great impact on business practice or business thought. They were not concerned with questions of measurement and dealt with problems from the individual or macro-economic perspective, while most writers in business areas approached questions from the point of view of the individual firm. In the area of personnel, however, George Odiorne applied the human capital approach to the individual firm: "These investments in human capital which Theodore Schultz defines . . . are often the direct concern of the personnel function in an organization."[25]

Odiorne had many years of business experience in the personnel area before becoming Professor of Industrial Relations and Director of the Bureau of Industrial Relations at the University of Michigan in 1959. He was concerned with justifying the personnel function within the traditional profit-oriented context. Odiorne argued that personnel did contribute to profits but that its contribution through

investment in people, was long-term rather than immediate. Management, generally concerned with short-run profitability, therefore tended to view the personnel function as an expendable area, the first to be cut in a down turn.[26] Odiorne thus saw a need to account for the investment in human resources in order to justify the contribution of the personnel function. He was, however, uninterested in developing measurements to facilitate that accounting process. For Odiorne MS thought exhibited a narrow emphasis on measurement and mathematical expression, and he explicitly rejected its usefulness in both personnel and general management. He argued that "To understand management in the area which relates to personnel and manpower, we must come to terms with man . . . with his gut-reaction, his sentiments . . . and the loves and hatreds which make his work a thing of joy or of despair."[27] Thus although Odiorne clearly outlined a framework within which human resource accounting could emerge, he had neither the tools nor the inclination to develop the measurements necessary to perform the functions he had outlined.

In the early 1960's the problem was approached from a different perspective, that of accounting. Roger Hermanson, a doctoral student in accounting at Michigan State University, wrote his dissertation in the area. In 1964 he published a monograph *Accounting for Human Assets,* whose stated purpose was "to investigate the implications and possible advantages of assigning asset status to human resources in accounting statements.[28] Hermanson's basic perspective thus was that of financial accounting. His methods for the valuation of human assets attempted to improve the measurement capability of financial accounting by bringing it closer to economic concepts of income (in the Hicksian mold). Although Hermanson cited economists in support of his views, he did not go to the human capital school of thought previously described. His economic authorities were writers such as Hicks, Fisher and Canning whose theories related in a more immediate sense to the nature of financial accounting. Hermanson also relied on classic accounting authorities such as Paton and Littleton, and the more recent thought of Leonard Spacek, Felix Kollaritsch, and the Sprouse and Moonitz study of accounting principles. Although he noted the possible uses of human resource data in financial analysis for internal purposes and the evaluation of management performance, his basic focus was on the accounting system.[29]

Both Hermanson and Odiorne viewed the problem of human resources from the perspective of their individual disciplines, per-

sonnel and accounting. Hermanson basically focused on the measurement process relative to financial accounting, while Odiorne dismissed measurement and sought a general change in management policy and attitudes toward the human resource function within the firm. Thus, it was not until the problem of human resources was placed within an interdisciplinary context that it fully developed. The interdisciplinary team approach characteristic of MS thought was critical for the development of the area and the impetus for that approach came in the mid 1960's from Rensis Likert, Director of the Institute for Social Research at the University of Michigan.

B. The Michigan Group

Likert's work viewed the problem from the perspective of the human-relations school described earlier. Philosophically, Likert and his group were in the humanistic tradition. They regarded the area of human motivation as the most important managerial problem and were looking for the one best form of management. Methodologically, however, Likert's work exhibits the inductivist-empiricist approach common to all areas of MS thought. He received his doctorate in psychology and thus was familiar with the research methodology and statistical analyses of the social sciences. He brought these techniques to bear on questions of organizational management. Based upon his own work and that of others at the Institute for Social Research (IRS) Likert developed a general theory of management in which the element of human resources was critical.

Likert outlined his theory in broad terms for the first time in *New Patterns of Management,* published in 1961. He argued for the greater effectiveness of the participative-group form of organization, one in which decision-making took place at all levels of the firm, with the satisfaction of a variety of employee goals in a friendly supportive atmosphere. Likert claimed to have found the best management system, and relied extensively on new measurement techniques and experiments to prove that claim. This approach, as we have seen, is characteristic of MS thought. Likert himself acknowledged that continuity of thought:

> Several decades ago Taylor (1911) pointed to the fact that human variability in performance could be used to discover better ways of doing work. The social sciences and their capacity to measure human and organizational variables are making possible the extension of this fundamental idea

> from the organization of the work itself to the problem of building the most productive and satisfying form of human organization for conducting any enterprise.[30]

Through observation, experimentation, and statistical analysis Likert sought to substitute fact for intuition in a very complex problem. Thus he noted that it was now possible to measure such aspects of organizational functioning as decision-making processes, motivational forces, and communication effectiveness. Some of the tools necessary for these measures were the sample-interview survey, controlled field experiments, and "refined methods of statistical and mathematical analysis."[31] Likert argued that through such measurements "Rigorous, quantitative research can now be used in place of the cruder methods available previously."[32]

From 1947 on, The Institute for Social Research at Michigan engaged in a large research program which essentially involved the application of these new research methods to problems of organizational effectiveness. In a series of related studies they sought to discover "the organizational structure and the principles and methods of leadership and management which result in the best performance."[33] Likert concluded, as noted previously, that the group participative form of management was most effective.

New Patterns of Management thus was simultaneously an argument for a particular management style and a demonstration of the broad MS approach applied to the management of organizations. The way in which the research was carried out was also in the MS mold, for although Likert was Director of ISR the program of research was a team effort. We may note too that the team existed before becoming associated with ISR; the staff of the Division of Program Surveys of the Department of Agriculture, headed by Rensis Likert from 1939-1945, became the Survey Research Center of the University of Michigan.[34] Researchers such as Angus Campbell, Dorwin Cartwright, Daniel Katz, Robert L. Kahn, Stanley Seashore, and Floyd Mann were heavily involved in the project, both at the Survey Research Center and the Research Center for Group Dynamics.

The team headed by Rensis Likert argued for a new management system, and central to that argument was the measurement of the human resources of an organization. Likert contended that the reason managers and others did not realize that the group-participative form of organization was superior was due to "the inadequacy of the measurement processes used by most companies."[35] They regularly got measurements dealing with end results, such as

production, sales, profits, investments in various assets, etc., but gave much less attention to what Likert called "intervening variables," those that "reflect the current condition of the internal state of the organization: its loyalty, skills, motivation, and capacity for effective interaction, communication, and decision-making."[36] End-result measurements were taken too on a relatively short-term basis, so the nature of the measurement system and the timing of the measurements combined to lead managers to look for short-run profitability. In those circumstances an authoritarian leadership style could look effective.[37] Short-run results and increases in productivity, however, were achieved at a cost to the human assets of the organization. Likert described an experiment in which increased short-run productivity later led to the deterioration of the human organization "as a functioning social system devoted to achieving the institution's objectives."[38] Likert recognized that until the intervennig variables were measured and analyzed on a systematic basis managers would not pay much attention to them. In order to prevent the liquidation of human assets it was necessary to obtain "adequate periodic measurements of the intervening variables to reveal the current character and quality of the human organization."[39]

Although Likert thus realized the importance of measurement, it was not really the major focus of *New Patterns of Management.* However, in *The Human Organization,* published in 1967, he emphasized the need to measure the human resources of organizations and tried to integrate that need into an accounting framework. With this shift in emphasis Likert reflected the emerging importance of information systems for managerial effectiveness in decision-making—a central tenet of MS thought in the 1960's (see Churchman's quote, page 20). Likert contended that the measurement of human resources should take place within the context of the largest information system in the organization, the accounting system. Thus, he devoted a full chapter to what he now called "Human Asset Accounting," cited accounting authorities such as Paton, and argued that measurement of human assets was necessary because important decisions were being made based on "something like 25% to 50% accounting," due to "the magnitude of the income-producing assets not yet included in financial reports."[40] Just as the earlier concept of group-participative management was codified into systems one through four, the need to measure the intervening variables was now clarified and expanded into proposals for human asset accounting.

Likert saw the capability to create human asset accounting arising from the new measurement processes of the social sciences:

> The social sciences, along with mathematics, have created methodologies for measuring and analyzing variables valuable both for helping an enterprise decide on which management system to use and for appraising the present state of its human organization. These methodological developments make it possible now to measure the causal and intervening variables with accuracies approaching or exceeding the accuracy of measurement of the end-result variables.[41]

The creation of human asset accounting thus required an interdisciplinary team, made up of accountants and social scientist trained in the new measurement techniques. Likert argued that Hermanson's work in accounting had not generated other research due to the lack of interaction among the various disciplines. The type of effort he visualized was a long-range project which would eventually develop sophisticated measurement and accounting procedures that would put in financial reports "reasonably accurate estimates of the current value of the human assets of an enterprise."[42]

Likert visualized several steps in getting at dollar estimates of the current value of human assets, which he argued was more important but more difficult to measure than the cost of the original investment. After measurement of the key causal and intervening variables over several year's time, statistical analysis could lead to the computation of the mathematical relationships between those variables and end-result variables, such as costs and earnings. Likert saw these formulae eventually being used in a routine manner to generate estimates that operate in the same way as standard costs.[43]

For Likert and his group the development of human asset accounting played a central role intended to prove the greater effectiveness of the System Four theory of management. Through measurement the intuitive art of management could become "science-based management" which would validate System Four. Instead of "the shifting sands of practitioner judgment" management could now be based on "verifiable information derived from rigorous, quantitative research."[44]

The validation of the System Four theory of management which provided the impetus for the development of human resource ac-

counting did not, however, become the dominant theme of the group that started working on the area at ISR. That group was drawn from disciplines within the Graduate School of Business Administration at the University of Michigan. Thus William C. Pyle was a doctoral student in the Department of Industrial Relations in the Graduate School of Business. Around 1966 he did a paper on the problem for a course in Industrial Relations, and a later course in change management, given at ISR, brought that work to the attention of Rensis Likert. It was Likert who brought Pyle together with the management of the R. G. Barry Corp., which then became the site of the first human resource accounting project.[45] Around the same time R. Lee Brummet, Professor of Accounting in the Graduate School of Business, was contacted by Rensis Likert, who needed an accounting perspective for *The Human Organization,* published in 1967. Brummet provided accounting advice for that work, and in 1967 joined the R. G. Barry project.[46] The third member of the team, Eric Flamholtz, was also a doctoral student in the Graduate School of Business, working in accounting, personnel, and organizational behavior. Through a talk given by Stanley Seashore he first heard about an ISR project trying to measure the goodwill attributable to human resources. It was in the spring of 1967, however, through a management accounting seminar with R. Lee Brummet, that Flamholtz was asked to get involved on that project.[49]

Thus there was by 1967 an inter-disciplinary team working on the problem of measuring human resources. The project was conducted under the auspices of the Center for Research on the Utilization of Scientific Knowledge at ISR rather than in any one department of the university, and Likert's views strongly influenced the early work on human resource accounting. This influence was reinforced by the commitment of top management at R. G. Barry, site of the project, to participative management. The specific need to measure human resources was seen, too, within the framework Likert developed in *The Human Organization.* Robert L. Woodruff, Jr., Vice President-Personnel, for example, argued that measurements were needed for a manager to keep track of all the assets entrusted to his care, thereby avoiding short-run profitability at the expense of assets that were not measured. He specifically cited Likert's chapter on "Human Asset Accounting" as having "sparked management's interest in developing a method of accounting for the total assets of business."[48]

The project at R. G. Barry provided manager-scientist interaction and also served as a field experiment in the management sci-

ence mold, with measurement techniques applied to a new area, human resources. The information about human resources generated through measurement would then flow through the accounting information system to be used in managerial decision making. At Barry the measurement techniques were essentially those of accounting, used to determine the cost of the firm's investment in human resources:

> First, an attempt has been made to identify human resource acquisition costs and separate them from other costs of the firm. Rules and procedures have been formulated to distinguish between the asset and expense components of human resource costs. Human resource investments are then classified into functional groupings called 'functional asset accounts' such as recruiting and acquisition, training, and familiarization, which are, in turn, allocated to personalized accounts for individual employees. Rules and procedures have also been developed for measuring human asset expirations which are recorded as amortization or as losses.[49]

On January 1, 1968, this system was put into operation for investments in managers, and later extended to other groups of employees.

Although, as we have seen, the earliest work at Barry strongly reflected Likert's ideas, by 1969 that emphasis had shifted toward placing human resource accounting more squarely within the information system relating to the functional areas of the business firm. As stated earlier, one of the basic characteristics of current MS thought is the measurement of resources within a management information system. By 1969 Brummet, Flamholtz, and Pyle emphasized managerial effectiveness as a function of "the ability to acquire, develop, allocate, maintain, and utilize resources."[50] Human resource accounting was, therefore, designed to provide information to facilitate the process of human resource management. Likert's intervening variables became only one section of a model depicting the information system for the acquisition, maintenance, and utilization of human resources.[51]

The R. G. Barry Project, under the direction of William C. Pyle, was the first experiment in measuring the cost of an organization's investment in human resources. The first experimentation with the measurement of human resource value was done by Eric Flamholtz in his doctoral dissertation "The Theory and Measurement of an Individual's Value to an Organization."[52]

Flamholtz attempted to develop measurements for what had previously been unmeasurable. He developed a model for the economic valuation of individuals, based upon the general economic theory of value, but concluded that it was not possible to operationalize this model. He therefore developed a replacement cost model as a surrogate for individual value, and argued that this was a "testable hypothesis." Using an insurance company as an experimental site, Flamholtz obtained empirical measures of replacement cost and assessed their validity as representations of an individual's value to an organization. In developing and testing the replacement cost-model he drew upon a variety of disciplines ranging from operations research and accounting through psychology, personnel and psychometrics. Flamholtz's work thus had an inter-disciplinary flavor, and although its primary focus was the measurement of value, he noted, too, the importance of the concept of human resource value for a systems approach to human resource management. Information about the value of an organization's human resources could provide a unifying concept for the process of human resource management:

> If the purpose of human resource management is seen as the optimization of human resource value, then selection, development, training, and performance appraisal are *not* merely a set of service functions to be performed if the organization can afford them; rather, they are a set of available strategies that can be employed to increase the value of the organization's human assets, and, in turn, the value of the organization as a whole.[53]

Thus the development of Human Resource Accounting at Michigan in the 1960's owed a great deal to MS thought broadly defined. Although management science did not cause HRA to emerge, its growth and implementation at a particular time and place was in many important ways due to the influence of MS thought. As we have seen, those researchers working in individual disciplines were not as successful as a concerted interdisciplinary effort in the MS mold. In addition, the methodology for implementation of Human Resource Accounting reflected essential MS ideas. An inductivist experimental approach generated measurements of previously unmeasured resources. These measurements were then to be used within information systems designed to aid managerial decision-making in complex situations.

III. Concluding Remarks

Although MS thought did not cause the development of HRA, there does exist a close relationship between these two areas. Managerial accounting grew out of the movement toward science based management. HRA, viewed as a new development in management accounting, is therefore a logical extension of MS thought applied to accounting. To early MS thinkers, accounting and OR—then surrogate for MS were highly similar disciplines, and to them, changes in one were expected to lead to changes in the other. For instance, as early as 1955, Wansborough-Jones noted this similarity by stating that, like accounting, "operational research has come to stay as another means of using measurement to help management."[54] Stafford Beer went even further and urged the two disciplines to exploit their kinship to mutual advantage:

> . . . the definitions of operational research and accounting indicate a remarkable identity of purpose. Each is concerned with the quantitative presentation of data, and each expects to influence managerial decisions and policy-making. Hence it would seem advantageous to each to exploit its relationship with the other.[55]

HRA, therefore, can be viewed as part of accounting's response to the progress, changes, and challenges posed by MS thought.

There is also a larger lesson in these developments which goes beyond linkages in related disciplines being mutually beneficial. One of the most important contributions of MS thought is its use of the multi-disciplinary approach in focusing on a problem. The power of this multi-disciplinary or, as Professor Churchman likes to call it, anti-disciplinary approach, is its ability to free its user from being wedded to any one world view. The problem is central and it is not subservient to the methodologies available in any particular discipline. Therefore, it can be attacked by drawing upon the specialized knowledge in unrelated disciplines.

This is particularly important in dealing with managerial problems because no single methodology is likely to be universally applicable. Unfortunately, in recent years there has been a tendency to move away from this multidisciplinary perspective. Consequently, problems have sometimes become secondary to methodologies and, more important, multiple perspectives have been ignored in favor of a single "reality" view. In accounting, recent research on security prices is very heavily based on a single reality-single methodology perspective.

The multi-disciplinary approach was particularly useful in the development of HRA. Most recent work, however, has focused on the measurements side of HRA from an economic perspective. This emphasis on accounting and measurement may have been valuable in gaining acceptance for HRA. There has been, however, little progress along the socio-psychological dimensions originally envisaged by Likert. Human Resource Accounting should be expanded in these directions as is proposed in a recent paper by Eric Flamholtz concerning the psycho-technical nature of HRA measurements.

Human Resource Accounting, finally, represents a major development in the adjustment of accounting to what has been called "post-industrial society." Just as modern cost accounting emerged after the Industrial Revolution of the nineteenth century, we have seen in the second half of the twentieth century the beginning of basic changes in the very nature and scope of accounting. Human Resource Accounting, as we have seen, reflects both major economic changes and the influence of management science techniques and approaches. Similarly, social accounting has attempted to deal with an increasingly complex society by using a variety of measurement techniques to focus on the contribution to society of the accounting entity. The role of management science in the development of HRA therefore illustrates the diverse forces acting upon accounting and the need for an historical understanding of those forces to be better able to deal with the process of change.

FOOTNOTES

[1]Smiddy and Lionel, p. 1.

[2]Readers interested in more information on Taylor's work should see Frederick W. Taylor, *The Principles and Methods of Scientific Management,* (New York: Harper & Row, 1911).

[3]For an excellent discussion of the development and spread of scientific management see Smiddy and Lionel (1954).

[4]A description of the early work by the human-relations movement is given in George C. Homans, *The Human Group,* (New York: Harper & Row, 1950).

[5]For a history of the early development of OR in the Army see Joseph F. McLoskey and Florence N. Trefethen (eds.), *Operations Research For Management,* Baltimore: The John Hopkins Press, 1954).

[6]Trefethen, p. 29.

[7]Trefethen, p. 30.

[8]Solandt, p. 3.

[9]Kendall, p. 267.

[10]Beer, (1959) p. 10.

[11]Beer, (1959) p. 12.

[12]Swan, p. 2.

[13]Swan, p. 4.

[14]This recent debate was sparked by a letter by Robert Machol in the TIMS-ORSA Newsletter (see OR/MS Today, TIMS, Nov. 1975) which generated a highly favorable response from other readers. As early as 1965, however, David Hertz had objected to the tendency to substitute form for content. He wrote: "I suggest that management has seduced science to its side by leading it away from truly scientific approaches to the kind of wish-fulfillment attacks on trivial problems we are all apt to deplore when we see them in cold print. And the kind of writing and exposition we do that management complains it cannot understand is simply the protective coloration of respectable clothing that any sensible seduced professional would want to wear when appearing before his own family."
See David B. Hertz, "The Unity of Science and Management," *Management Science,* Vol. 11, (1965), p. B-95.

[15]A more complete development of this philosophy is contained in Fremont E. Kast and James E. Rosenzweig, *Contingency Views of Organization and Management,* Chicago: SRA, Inc., 1973.

[16]Readers interested in learning more about these concepts should see L. Von Bertalanffy, "The Theory of Open Systems in Physics and Biology," as reprinted in F. E. Emery ed., *Systems Thinking.* (Baltimore, Md.: Penguin Books, 1969); and Norbert Wiener, *Cybernetics: Control and Communication in the Animal and the Machine,* (Cambridge, Mass.: MIT Press, 1948).

[17]Boulding, pp. 197-208.

[18]For a more complete discussion of the theoretical and practical aspects of socio-technical systems see F. E. Emery and E. L. Trist, "Socio-Technical Systems" as reprinted in C. W. Churchman and M. Verhulst, eds., *Management Sciences,* (N.Y.: Permagon Press, 1960).

[19]Churchman, p. X.

[20]Churchman, p. 39.

[21]For example, see William J. Vatter, "Contributions of Accounting To Measurement in Management," *Management Science,* Vol. 5, (1958), p. 27.

[22]Churchman, p. 42.

[23]See for example, Mincer, pp. 281-302.
Becker, (1964).
Mushin,
Miller,
Becker, (1960), p. 50.

[24]Schlutz, p. 1.

[25]Odiorne, p. 158.

[26]Odiorne, p. 162, p. 226.

[27]Odiorne, p. 381.

[28]Hermanson, p. 6.

[29]Hermanson, pp. 41-42.

[30]Likert, (1961), p. 3.

[31]Likert, (1961), p. 5.

[32]Likert, (1961), p. 5.

[33]Likert, (1961), p. 5.

[34]Likert, (1961), p. 216. See also *American Men and Women of Science,* Social and Behavioral Sciences, Vol. 2. 12th ed. (New York: Jacques Cattell Press/R. R. Bowker Co., 1973), p. 1488.

[35]Likert, (1961), p. 61.

[36]Likert, (1961), p. 61.

[37]Likert, (1961), p. 69.

[38]Likert, (1961), p. 71.

[39]Likert, (1961), p. 73.

[40]Likert, (1967), p. 102.
[41]Likert, (1967), pp. 129-130.
[42]Likert, (1967), p. 146.
[43]Likert, (1967), pp. 148-152.
[44]Likert, (1967), p. 1.
[45]Telephone interview with William C. Pyle, June 1, 1977.
[46]Telephone interview with R. Lee Brummet, June 1, 1977.
[47]Interview with Eric Flamholtz, June 2, 1977.
[48]Woodruff, p. 2.
[49]Brummet, Pyle, and Flamholtz, (1968), p. 24.
[50]Brummet, Flamholtz, and Pyle, (1969), p. 12.
[51]Brummet, Flamholtz, and Pyle, p. 14.
[52]Flamholtz, (1969).
[53]Flamholtz, (1969), p. 124.
[54]Wansborough-Jones, (1954), p. 3.
[55]Beer, (1954), p. 12.

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Rosalie C. Hallbauer
FLORIDA INTERNATIONAL UNIVERSITY

STANDARD COSTING AND SCIENTIFIC MANAGEMENT

Abstract: Many have suggested that scientific management had a direct influence on the development of standard costing. This paper examines the relationship between these concepts in broad terms. While it is concluded that no direct relationship exists between scientific management and standard costing, the existence of an indirect relationship is acknowledged. Scientific management does not require any specific type of accounting system and standard costing does not require a certain type of management organization to operate. However, certain reports developed for the scientifically managed enterprise, when added to the germs of standard costing that existed, expedited the evolution of standard costing.

In 1970, the AAA Committee on Accounting History suggested among several research topics, one looking into the effect of scientific management on the development of standard costing. Prior to this, a number of authors suggested that there was a relationship between the two areas.[1]

A number of different statements have been made regarding the development of standard costing. These include the following:

—Standard costs . . . represent the application of the scientific management idea in one division of the business . . . the factory.[2]

—Standard costing undoubtedly originated through the comparison of actual costs with estimates. As estimating became increasingly scientific and accurate, the possibilities of eliminating much of the detailed cost finding and of controlling costs of production in bulk were visualized.[3]

—Although scientific production control (beginning in the 1880's) may have predated the "not so well known" scientific cost control by about one third of a century, both had . . . an engineering origin.[4]

These, however, do not clarify the evolutionary process.

This paper will not be an attempt at a complete documentation of significant events in the development of scientific management and standard costing.[5] It will present some background information, a

broad comparison as to points of similarity and difference, and a discussion of whether or not scientific management affected the development of standard costing.

Estimated Costs

> For which of you, intending to build a tower, sitteth not down first and counteth the cost, whether he have sufficient to finish it? St. Luke 14:28

The concept of estimated costs is a long standing one. There were some developments in this area, both prior to and concurrent with the evolution of the principles of scientific management, that support the view that standard costs evolved from estimated costs. Many of these were described by Sowell and only a few key items will be mentioned in the present discussion.

Cronhelm (1815) mentioned an estimating method which hinted at the idea of quantity standards: ". . . not, however, in the quantity of that material, but in the quantity of manufactures which it *ought* to produce, according to those rules and proportions which are estimated in all regular and well managed concerns."[7] Babbage (1841) touched upon the idea of efficiency:

> "The great competition introduced by machinery and the application of the principles of the subdivision of labour, rendered it necessary for each producer continually to be on the watch, to discover improved methods by which the cost of the article he manufactures may be reduced, and with this view, it is of great importance to know the precise expense of every process . . ."[8]

Garcke and Fells (1893), while also using the term "cost estimate," felt it was necessary to know the cost of production in terms of estimates of wages and materials, *before* manufacturing any order so as to keep such costs at a minimum.[9] They suggested that:

> ". . . before any order to manufacture is given it is advisable as tending to produce greater economy in cost of production that the person being acquainted with its processes and details should estimate the probable cost to be measured in wages and materials, in the production of the article in question. This estimate should be a minimum rather than a maximum one, and the storekeeper, having been furnished with the particulars of it, should not

> issue more material for the order than is estimated without authority."[10]

In the early twentieth century, three interesting views were expressed. Burton (1900) recognized the importance of the engineers and "advocated a standard estimate for each standard type of machine."[11] Goode (1900) urged the use of pre-determined production cost for a standard quantity of each item produced[12] and presented a method for analyzing deviations from this amount which resembled the rate and quantity variances of standard costing.[13] The third idea was expressed by Lean (1901); he felt the cost accounts should, among other things, show the estimated and actual costs related to a standard unit of weight.[14]

Such views lean toward standard costing. The methods used to develop the estimates, however, generally were based upon past experience or the expertise of the person responsible for establishing the estimates rather than on a scientific analysis of the production process. One early contributor to standard costing, J. R. Wildman, on emphasizing the difference between standard and estimated costs, said that " 'predetermined costs should be technically distinguished from estimated costs, in that they are constructed from predetermined standards scientifically obtained.' "[15]

Standard Costing

> . . . it is more important to know how much a product *should cost* in detail and to ascertain only the amounts and causes of any excess over this cost than it is to know how much a product *has cost* in detail but with perfunctory knowledge of much it should cost.[16]

Standard costing and standard costs have been defined in many ways in the early literature. Two comprehensive definitions have been suggested:

> . . . standard costing is a method of ascertaining how much costs should be and analyzing the causes of variations between how much they are and how much they should be.
>
> Alternatively, standard costing is a scientific method of developing a comprehensive series of cost standards to cover the activities of a business, of comparing actual costs against cost standards in such a way that the causes of variations are revealed in full detail, and of combining the variations to form a complete statement of profit and loss.[17]

Many definitions of "standard cost" exist, ranging from a benchmark to "an accurately developed measure of the cost of performing specified work under predetermined conditions."[18] The difference between standard and estimated costs is more fully described in the following statement by C. Bennett in 1922:

> "A great difference exists between modern standard costs and the cost estimates mentioned by some mills, which they sometimes confuse with standard cost methods. Approved predetermined costs reflect what the costs of each style should be and represent the results expected from the mill. Actual results are carefully controlled and kept within the standards in all possible areas . . . thus while standard costs are considered as representing the real cost with the actual results accordingly gauged, estimated costs are merely guesses with periodic attempts to reconcile them with actual operating results. Modern standard cost accounting methods decide what costs should be and then take steps to realise these standards through actual operating."[19]

One of the main functions of the cost accountant is to advise management of exceptions to planned performance. "The cost accountant who is called upon to provide an efficient measure of performance must devise a measuring stick from which as far as possible all factors have been eliminated except for the factor, production efficiency, which he wishes to measure."[20] While the use of "estimated costs" can develop deviations from spending plans, it does not differentiate between those from price changes and those from efficiency changes. Standard costs aid in highlighting production efficiency since variations due to fluctuations in actual prices are eliminated and the basic comparison is between actual input quantity and standard input allowed for the actual production output. The concentration on the differences from predetermined costs aids in cost control, among other things. Before-the-fact knowledge leads to general expectations throughout the appropriate areas of the firm and the coupling of this with "management by exception" provides for cost control as well as performance evaluation.

Scientific Management

> The essential core of scientific management regarded as a philosophy was the idea that human activity could be

> measured, analyzed, and controlled by techniques analogous to those that had proved successful when applied to physical objects.[21]

The development of the principles of scientific management generally is attributed to the efforts of F. W. Taylor, who was interested in a "system of shop management."* Harrington Emerson saw a greater importance to scientific management:[22]

> . . . the underlying idea of scientific management is the predetermination of results and the standardization of methods and conditions. Instead of working to more or less nebulous ends, under scientific management methods definite ideals are established and all efforts concentrated towards the attainment of these ideals by adoption of standardized methods . . .[23]

A standard under scientific management was defined as " 'a carefully thought out method of performing a function, or carefully drawn specification . . . The standard method of doing anything is simply the best method that can be devised at the time the standard is drawn.' "[24] The most difficult standards to set were those for time because of the need to allow for planned idle time. Drury said that "the original reason for the infusion of standardization into scientific management was a demand for it on the part of scientific rate fixing."[25] This was discussed more fully by Simeon:

> The labor cost is that portion of the total cost which is generally th largest and nearly always the most elusive and difficult to regulate. Accurate, prior knowledge of the time in which work should be done has a value that cannot be overestimated in reducing the labor cost under day work, and is an essential under piecework, bonus, premium or kindred system.[26]

Scientific management was concerned with the elimination of waste—"waste of material, labor, equipment and capital."[27] As an aid in carrying this out, the exception principle, whereby manage-

*The four principles of scientific management are:

1 " 'the development of a true science,' " the reducing of all things to law;
2 " 'the scientific selection of the workman;' "
3 " 'his scientific education and development,' " or " 'bringing the science and the workman together;' "
4 " 'intimate, friendly cooperation between the management and the men,' " or the almost equal division of the work.' "

Copley, Vol. I, pp. 329-330.

ment received condensed, comparative reports which highlighted all deviations from standard performance—good and bad, was emphasized as a way of giving a quick picture of current progress, or lack thereof.[28]

A basic part of scientific management was to provide the factory, *ex ante,* answers to the following questions: "Exactly what has to be done? What is the best way to do it? How long should it take?"[29] This led to the idea of the task, which formed the basis for much of scientific management. Under this concept, the workman's job was completely determined beforehand and, frequently, he was given detailed instructions specifying the job, how to do it, what tools to use, and the exact time to use.[30] These instructions were based upon the standards as developed under scientific management.

A. H. Church, in discussing the meaning of scientific management, felt it conveyed two basic ideas: 'the planning of industrial activity from the consideration of its simplest units" and "the predetermination of standards of efficiency."[31] He also emphasized that "scientific management is a body of principles" rather than a system. He summed up his views as follows:

> . . . it is the application of accurate thinking, accurate planning, and accurate doing, so as to increase output, reduce cost, and by consequence render available a larger margin of surplus for division between employer and employee.[32]

Scientific Management and Accounting

> . . . . costs are the foundation on which scientific management must be built. They enter very largely into the whole structure, and finally they support the roof.[33]

In the literature on scientific management there are several references to the role of accounting in ensuring the success of the scientifically managed enterprise. Taylor, himself, was involved in developing accounting systems for the firms that adopted the principles of scientific management, and was called a "pioneer in the development of modern industrial accounting" by his biographer.[34] The old cost accounting methods no longer were appropriate; the accountant had to adopt the "engineering point of view"—the need to look ahead rather than only to record the past.[35]

The Taylor system "required prompt and accurate reporting of costs."[36] As a by-product of this system for improving efficiency,

cost data leading to "quicker and more accurate reporting" are generated.[37]

> Accurate detailed Costs are essential for economical production. Under scientific management the costing system forms one of the principal factors in controlling the general efficiency of the work. . . . A good costing system . . . enables the management to be in constant touch with every factor that affects economy of production.[38]

In the 1890's Taylor realized that timely cost information was necessary and, to achieve this, developed the monthly report and, later, the daily report (previously, reports were annual or semi-annual). He also placed the cost accounting function in the planning room and integrated the cost accounts with the main set of books.[39] The move to the planning room ". . . made cost accounting a by-product of operations, and thus got . . . costs *coincidentally* with the operations."[40]

In 1898 Taylor, in a report written to Bethlehem Steel outlining the cost and accounting system he wanted to install, said:

> "It is evident that the system of bookkeeping in each large manufacturing works presents a problem distinct from that in almost any other establishment since the methods of manufacture, the nature of the product and the information called for by the officers of the Company differ in each case to such a great extent. The bookkeeping system must in each case, therefore, be so arranged that it fits into the piecework plan and the general method of running the works at one end, and at the same time it must be especially adapted to giving the various daily and monthly reports called for at the other end, . . .
>
> The system should insure an accurate determination of the cost of all goods manufactured by logically and exactly distributing at the end of each month the total expenses of the month . . . onto the articles of manufacture which were worked up during the month, and complete comparative cost statements for all articles completed during the month should be . . . handed over to the proper officers of the Company. . . ."[41]

The accounting systems set up by Taylor were detailed as to the type of accounts and reports to be utilized and affected the entire organization.[42]

By 1909, in a Harvard lecture, Taylor had changed his views regarding the importance of the cost accounting system to scientific management.

> ". . . Fifteen to twenty years ago I looked upon a current cost system as one of the most important among the various elements of management, and in fact devoted a large part of my time to introducing systems of cost and of expense analysis in manufacturing establishments. Now, however, under the moden scientific management, as far as they *influence cheapness of manufacture*, costs and expense analysis become, comparatively speaking, elements of lesser importance, and we generally leave them to last in the introduction of our system. . . . Costs are needed, in many cases, in order to regulate the selling prices, also for the general education of the sales department, and for deciding upon the future lines of progress for the business. But under scientific management what was formerly their chief value, namely, helping to get a low cost of manufacture, almost entirely disappears. . . ."[43]

This view was expressed again in 1911: " 'My experience has led me to place less and less faith in accounting as a road to economy.' "[44] Taylor was especially concerned with the inability of accounting to provide remedies for the inefficiencies it turned up.

Two types of standards existed in these early years: production and cost. Production standards were emphasized under scientific management:

> . . . a production standard is constructed on the basis of an expected maximum performance. . . . Production standards are indices of operating efficiency; they are the real yardsticks of productivity.[45]

Cost standards, on the other hand, were "based on actual experience as evidenced by past records indicating normal conditions."[46] While production standards were viewed as being interested in achieving maximum output at a minimum investment in the factors of production, they were not appropriate for most costing purposes; however, it was felt that they should merge with the cost standards as much as possible.[47] The two standards could, and should, exist concurrently and the results from their application should be compared constantly. Emerson carried this idea further: "It is . . . very important that both efficiency statements and cost statements keep

close together, that both shall use the same unit, that both shall use equivalence (standard cost) and that expense be stated in two terms: Standard Cost and Waste."[48]

General Comparison

> No one can read Taylor's famous paper on "Shop Management" of 1903 without seeing that many of the essential elements of standard costing are there, including what is perhaps the first references to "management by exception.[49]

Two different methods of determining production costs have been mentioned—the old way using *ex post* figures and the "modern approach" using *ex ante* figures. The standard costs were developed by "standardizing the efficiency of men, machines, materials and methods, rather than the cost of the work;'[50] they could be viewed as evolving from the standardized job concept (implying equalized rates and uniformity of the basis for setting the rates) as developed through scientific management.[51]

Scientific management developed physical standards, especially for labor time, and used comparisons of standard and actual times to determine bonuses. It also urged the reporting of failures to meet the standards to appropriate managers. In these respects, it did tie in with standard cost variance analysis procedures. It did not appear, however, to state these variances in monetary terms nor to calculate variances.

The accounting systems described by Taylor, while being very complete, did not incorporate the variances developed in the reports into the accounts.[52] The systems closely resembled the "normal" cost method of actual prime costs and predetermined overhead rates.

Emerson, who strongly advocated the idea of a forward looking approach to cost determination, felt that the old methods did not reduce waste due to the untimeliness of the data and the possible inclusion of irrelevant costs. The modern method, on the other hand, provided a means by which losses due to inefficiency could be measured and ways of diminishing such losses developed.. He also felt that standard costing should be introduced before scientific management so that the accounting system would be ready for the input of the industrial engineer and could aid him in evaluating the success of his work.[53] This was a view somewhat contrary to Taylor's later thoughts. The same idea was expressed by de Haas:

> The introduction of a system of standard costs is in no way dependent upon the existence of any particular kind of internal organisation. It does not presuppose scientific management, in fact it may almost be stated axiomatically that it should preceed the introduction of scientific management.[54]

While these authors are saying that a firm can have standard costing without adopting the philosophy of scientific management, they are not precluding the need for a close cooperation between the cost accountant and the industrial engineer. Taylor, himself, felt that any accounting system could be adapted to handle the piece work records and reports required for scientific management.[55]

Conclusion

A direct relationship between scientific management and standard costing is not clear. The literature on scientific management does refer to the need for good cost data, accounting records, and reports to ensure that the desired efficiency is being attained, but the concept of a "standard cost" is not obvious. The same holds true for the literature on standard costing. The use of industrial engineering techniques for the determination of the physical standards is acknowledged, but such techniques are not related back to the philosophy of scientific management in many cases.

Inasmuch as scientific management is a philosophy rather than a system, it appears more likely that standard costing evolved from the estimated cost systems that existed, with industrial engineering techniques providing the "more scientific and accurate" methods of estimation. Estimated cost systems did develop variances from the estimates; such variances, however, did not separate out the price and efficiency components. The reports prepared for a scientifically managed enterprise looked specifically at the efficiency side, but in nonmonetary terms; this is still an acceptable approach for reports submitted to lower levels of factory management. Also, scientific management did improve the types of reports received by management with the adoption of the concept of management-by-exception; however, variances from plans can be developed and reported without standard costs, e.g., variances from the budget.

While one cannot say whether standard costing would have developed without the influence of the scientific management movement, the philosophy of scientific management, especially as implemented in the factory, had a great influence on the timing of its

development. The early comments regarding estimated costs show that the ideas of standard costing were evolving, but the great awareness of the need for measures of efficiency created by the adoption of the principles of scientific management expedited the evolutionary process.

FOOTNOTES

[1]See, for example: Solomons, 1952B; Sowell, Ch. IV; and Chatfield, Ch. 12.
[2]Harrison, 1924, p. 193.
[3]Kearsey, p. 5.
[4]Jaffe, p. 267.
[5]See, for example, Epstein.
[6]See Sowell, Chs. II and III.
[7]Sowell, p. 20, emphasis added.
[8]Sowell, pp. 30-31.
[9]Sowell, p. 38.
[10]Solomons, 1952B, pp. 38-39.
[11]Sowell, p. 51.
[12]Sowell, p. 52.
[13]Sowell, p. 121.
[14]Sowell, pp. 52-53.
[15]Sowell, p. 194.
[16]Kearsey, p. 1.
[17]Kearsey, p. 2.
[18]Kearsey, p. 4.
[19]Solomons, 1952A, p. 458.
[20]de Haas, pp. 30-31.
[21]Aitken, p. 16.
[22]Harrison, 1920, pp. 237-238.
[23]Harrison, 1924, p. 132.
[24]Spriegel and Myers, p. 79.
[25]Drury, p. 71.
[26]Simeon, p. 68.
[27]Harrison, 1927, p. 193.
[28]Taylor, 1911, p. 126.
[29]Simeon, p. 68.
[30]Taylor, 1967, p. 39.
[31]Church, p. 98.
[32]Church, p. 100.
[33]Boyd, p. 406.
[34]Copley, Vol. I, p. 363.
[35]Sowell, p. 148.
[36]Aitken, p. 114.
[37]Aitken, p. 114.
[38]Aitkenson, p. 370.
[39]Copley, Vol. I, p. 369.
[40]Copley, Vol. I, p. 369.
[41]Copley, Vol. II, pp. 142-143.
[42]See Taylor A and B.
[43]Copley, Vol. I, p. 367.
[44]Copley, Vol. I, p. 367.

[45]Castenholz, pp. 82-83.
[46]Castenholz, p. 81.
[47]Castenholz, pp. 84-85.
[48]Emerson, pp. 198-199.
[49]Solomons, 1952B, pp. 39-40.
[50]Sowell, p. 211.
[51]Goudey, p. 217.
[52]See Taylor A and B.
[53]Harrison, 1924, p. 43.
[54]de Haas, p. 32.
[55]Copley, Vol. II, p. 144.

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D. A. R. Forrester
UNIVERSITY OF STRATHCLYDE

"WHETHER MALCOLM'S IS BEST OR OLD CHARGE & DISCHARGE"*

Abstract: In 1775 A.D. the recommendation was made that the accounts of Glasgow College be changed from the traditional charge and discharge type of records to a double entry bookkeeping system. This touched off an academic controversy that lasted for many years and generated much bitterness among the Faculty of the College.

Public sector accounting in the 18th Century was still in most countries clearly derived from medieval practice. But important innovations in Exchequer practice in Britain began in the 1780s. Some of these reforms were anticipated in a dispute at Glasgow College which illustrates certain themes, and the resistance innovators could encounter. In Scotland and not least in Glasgow a new liberalism flourished at the same time as the American tobacco trade brought prosperity. For the University, a period of peace and international repute ended as Adam Smith resigned his Chair in 1764. Subsequent efforts to reform the university constitution and administration aroused donnish disputes of growing intensity.

John Anderson, Professor of Natural Philosophy, advocated the University's accounts should be kept in journal, cash book and ledger, referring to Alexander Malcolm's "Treatise of Bookkeeping or Merchants' Accounting" (1743 A.D.). Principal Leachman supported the traditional stewardship accounts being maintained by the factor, Professor Morthland. A local satirist observed:

> "No strife about book-keeping sharpened their range
> Whether Malcolm's is best or Old Charge and Discharge:
> Of which as examples of learning and wit,
> Long speeches were made and huge volumes were writ.
> and still as their noodles were puzzled,
> They got swarms of book-keepers' clerks to unravel the knot;
> When after rewarding with thanks and with plate,
> They let loose on their steward a tempest of hate."[1]

*The author acknowledges advice generously given on earlier drafts by Professors B. S. Yamey, W. E. Stone and G. A. Lee.

The Visitation System

The University, the second in Scotland, had been founded by a papal bull of 1451 A.D. It was reformed in 1577. After the Glorious Revolution of 1688, and the establishment of Presbyterianism, the revenues of the former archbishopric were granted under lease to the University, with its single college. Income was also received from a sub-deanery. General revenues were brought together in a third, ordinary account. In addition, specific bequests or mortifications had to be separately accounted for.

In 1727, there had been accusations of malpractice against the Principal, leading to a special Royal Visitation. The powers of dean and professors or masters were at this time clarified, leaving the principal responsible for practical matters and for chairing faculty meetings. Professors resided during term-time in houses on the campus. The close, collegiate life prompted disputes, the settlement of which, along with other functions, was entrusted to the College Visitors.

The visitation system originated in the supervision of medieval religious houses. In 1772, when applying to the Courts in Edinburgh for some constitutional reforms, John Anderson referred to William Blackstone's "Commentaries on the Laws of England", which noted:

> ". . . the tendency for individuals and corporations to deviate from the end of their institution. The law had therefore provided proper persons to visit, enquire into and correct all irregularities in such corporation." (1765, I, cap. p. 46)

(Blackstone in 1753 had written a treatise for his fellow Bursar of All Soul's College, Oxford, where the accounting system was "of as high Antiquity as the Mallard or College Mascot.")

In Dr. Robertson's History of Scotland published in 1759, Anderson also found support for asserting that societies are never reformed from within but always as forced by some "foreign hand".

An alternative course was suggested by Adam Smith in 1776, when he implied that the invisible hand of competition could guide, motivate and correct the efforts not only of the butcher and baker, but also of masters, provided they were remunerated from fees and not from funds.[2]

The Visitors of Glasgow College could scarcely, however, be described as "a foreign hand". One was himself a master, in his office of dean of faculty. The second was the Presbyterian Minister of Glasgow, a post combined somewhat later with that of college principal. Only the third, the rector, was elected by masters and

students each year. Normally, he was a national figure. In 1775, the rector was the 9th Lord Cathcart, to whom John Mair dedicated his "Book-keeping Modernized". In 1776, it was Baron Montgomerie of the Scots Exchequer. In 1783, Henry Dundas was elected: he was twice Treasurer of the Navy and in 1806 was unsuccessfully impeached for privately holding state funds. In 1784, the rector was Edmund Burke, who four years before had proposed "Economic Reform" of the Exchequer. In 1786 and '87, Adam Smith was elected. The long-drawn out controversy over college accounting came to the attention of important people, and may be set in national perspective.

Auditor independence could thus scarcely be guaranteed, especially when the rector's inauguration was accompanied by much conviviality, the expenses of which in 1755 are fully detailed and vouched. (The food and drink were not as rich, however, as that provided for feasts of the audit at Trinity College, Cambridge early this century, commemorated by turtle shells on the old kitchen walls!) In addition to the Visitors, Glasgow magistrates normally signed the college accounts, until 1778, when they refused, and the Principal appended a note of his disagreement with the Visitors' docquet approving an experimental and minor change of form, thus constituting himself "Visitor to the Visitors", Anderson claimed.

New Professionalism

While Lords and Magistrates were accustomed to audit functions, a new professionalism of administration was emerging in this century. The Royal Visitation had prescribed that the college books should be kept by a single factor, who was to be a near relative neither of the principal nor masters. Yet the interests of incumbents were preserved! Professor Morthland continued to act as factor at that time; and in 1745, the college factor's duties were taken over by his son Matthew, a writer with some legal training.

It was Matthew Morthland's accounting which Anderson found so hard to change. One of those brought in to help was James Hall, who succeeded Morthland in 1784. Hill's son later joined him in a partnership, which with changing membership continues as legal factor to the University till the present day.

Gradually, therefore, professionals took over administrative and accounting functions from the faculty, whom Anderson sought to involve in technical matters:

> "The art of book-keeping never was and never will be disparaged by those who know it. It is the duty of every mem-

> ber of this College to know as much of it as will enable him to judge whether the Factor's accompts and his Cash book, Journal and Ledger be properly kept."[3]

The Principal confessed he had neither talents nor taste for such accounts as required deep skill in book-keeping but, after thirty years of application and drudgery, felt that he knew how tot keep accounts in the best order. Of his colleagues he wrote:

> "The Faculty satisfied with the accuracy of the account . . did not think it of much importance to enquire minutely into the particular modes of book-keeping which few of them understood and fewer had leisure to study from constant application to the business of their profession."

Charge & Discharge Accounts

The controversy in 1775 focused on the form and timing of Morthland's accompts, which were inscribed in three large volumes and submitted annually to the faculty. For each of the three classes of revenue, to sums outstanding from the previous year were added current revenues, and from this total charge were deducted payments made by the factor and his salary, leaving a balance due for settlement, or carry forward. The system had originated in the Exchequer of the Norman kings in the 12th Century. It was traditional, widely spread and emphasized personal accountability. The Principal was "the accountant" for the Archbishopric revenues, and had to appear at the Scots Exchequer every three or four years to have accounts derived from Morthland's passed by the officials and auditors, paying fees of £33 before receiving his quietus *(See Illustration I).*

In 1775 Professor Anderson appealed to the Edinburgh Law Courts for changes to be made in the accounts, but the matter was remitted for decision to the College Visitors. They met first in Glasgow and then at Lord Cathcart's Schaw-Park house. Their degree prescribed a scarcely amended form of account *(Illustration II).* A footnote suggested that:

> "the order of articles is a matter of indifference:
> only to facilitate the comparing the accompt that
> is examined with the preceding year's accompt, one
> and the same order should be preserved."

Anderson held that clarity depended upon the distinctness of order in which articles were stated. Later the faculty resolved that the

ILLUSTRATION I

"In the book of foreign Accompts, In the nineteenth year of the reign of his Majesty King George the Third—

Doctor William Leechman Principal of the University of Glasgow and the other Masters and Professors in the said University Accounting for the Tack Duty of the rents and duties payable to the late Archbishop of Glasgow as per Tack from his present Majesty under the Privy Seal, dated the 12th day of May 1779 to the said Principal and Masters and to their Successors in office for the use and behoof of the said University for the space of nineteen years, commencing from the term of Midsunday 1773 and ending at the term of Whitsunday 1792 being for the crops and years of God 1773, 1774, 1775, 1776 which is the first four years of the present Lease, and of their issuing, paying and disbursing the same rendereth an account of £MM.CC. vi: s d xix: vi 8/12 the yearly sum of £551. 14.10 8/12 sterling as the tack duty payable by them."

(From the total Charge above was deducted bursaries, salaries and grant for instruments for making experiments in Natural Philosophy).

Excerpts from

The Principal's "Quietus" from the Scots Exchequer" (Scottish Record Office, E215/3 p. 57).

same order and form must be used in the primary books and in the final accounts.

Double-entry Books

In appearing before the Visitors and subsequently, Anderson pressed for double-entry books.

The Royal Visitation of 1727 had prescribed that the factor should keep an accurate cash-book, journal and ledger. Thomas Harvie, a merchant, had at that time put the College books in order. But a half century later there was a problem of interpretation. Morthland insisted to Anderson that his cash-book was rightly kept, meaning his rental or collection book. When earlier asked for his ledger, he claimed to have a book of that kind which would give every satisfaction.

Anderson with a small committee was put in charge of the implementation of the Schaw-Park decree. For this purpose they may well have bought a handsome folio book still preserved in the university archives and inscribed "The Factor's Ledger": inside there are no entries whatsoever! The problem, of course, was to adapt Italian, traders' book-keeping, as described by Mair or Malcolm, to the needs of estates and stewards. Principal Leachman and others

ILLUSTRATION II

The Factor's Annual Accounts

Approved for Glasgow University, according to the
Schaw-Park Decree of October, 1775.

Charge or Dr.	*Discharge or Cr.*
1. Balance of last Account when due by the Factor and not paid	1. Balance of last account when due by the College and not paid
2. Deductions or rests, judged not be absolutely desperate stated in one article as they stood in the discharge of the last account.	2. Disbursements stated and casual, including the Factor's Salary.
3. Rental divided into its different articles as normal.	3. Deductions or rests judged to be absolutely desperate and irrevocable and therefore unnecessary to be carried to the next accompt
4. Annual Rents or sums belonging to the account which the Factor is empowered to levy within the year accounted for.	4. Deductions or rests, judged not to be absolutely desperate, refering to a particular list, signed and dated by the Factor and examined by the Faculty, which the Factor is to charge himself within the second article of the next account.
5. Casual articles that come into the Factor's hands: such as donations or legacies to the College, gross sums, etc.	5. Balance of Account when due by the Factor.
6. The Balance of this account when due by the College.	

Source—"The Management of the College Revenues" p. 184.

doubted whether the visitors of 1727 had meant to tie the factor to the artificial modes in use among merchants who had extensive and complicated dealings: neither journal nor ledger could be applied in a normal sense, they submitted, nor were the rules of the art really necessary except as always applied. The Principal felt that the *origo mali* or real source of conflict would appear to a disinterested spectator as lying in a perhaps bigoted attachment to long established practice on one side, and in an enthusiastic admiration of speculative rules of art on the other.

Fears were expressed that the new system to be introduced might be found cumbersome, tending to the utmost confusion.

Anderson admitted that the new system could be abbreviated, if accompanied by an accurate ledger and a bill of arrears. Against the outdated practice, Anderson claimed, there were three laws: the law of reason, the laws of book-keeping, and the Statute of Visitation.

Professor Anderson was sanguine that improvement could soon be obtained since in 1776, he said, there were in Glasgow five hundred persons who had studied and understood the regular method of book-keeping, as taught by many: a few guineas would be enough to arrange the accounts better than Morthland had managed. Some time later he challenged the Principal to pay the fifty or hundred guineas due, or to get people willing to put the accounts in order and take nothing for their trouble.

The first practitioner brought in 1776 to open the new books was Carrick, a banker: after a month or two he declared himself averse. Then Marshall, Hill & MacNae were each set to work. By 1778 the work was at a standstill and Anderson tried to blame Morthland for the delays. Then, in 1780, McNae & Hill

> "declared that in their opinion the complex, laborious and expensive mode of keeping accounts which may be necessary in complicated mercantile business is not necessary nor proper nor useful in accounts as plain and simple as the college ones indisputably are."

Principal Leachman called that if all the masters of book-keeping in Europe were assembled they could devise no shorter, simpler and safer form that charge and discharge. The law courts had ordered accounts presented in the artificial form of book-keeping "to be thus simplified for the examination of persons not adapt in the art."

Finally the Principal offered to submit all Morthland's accounts as being in conformity with the Decree to the opinion of any three merchants, such as Glassford, Speirs & Henderson: and engaged under penalty of £500 to exhibit a form of College accounts acceptable to those merchants or any three noblemen's factors. The old forms of accounts, he was ready to show, were clearer and better by induction of particulars.

Accountability

Further significant differences emerged over whether Morthland was accountable for cash received or for a "full charge". Anderson believed that a cash accounting system was best. Although Morthland's duties included the raising of revenues and the enforcement

of dues, Anderson held that he should be accountable only for his "intromissions", or the actual levies received by himself and subordinates. A distinction was made between a tax-farmer responsible for the precise amount bid and a factor or agent; and Morthland should not be seen as "some mongrel kind of being". The Principal explained that Balliol College accounted to them on the basis of full charge, while they accounted to the Treasury for a bequest by King William III in terms of *proventus et expensae* formally, but in practice for full rentals collectible. Caught within the traditional and state system, Leachman asked if it would be for the general benefit of all civilized nations to account for actual receivings and actual disbursements, without the check and control of a rental or charge. Morthland defended the accuracy of his rental and demanded:

> "What is the authority the college goes upon in making any alterations in their original charge given to me and my predecessors past memory, whereby you account with the Lords of the Treasury and with the Court of the Exchequer who have the rental of the Archbishopric recorded exactly the same as in your charge."

Many of the misunderstandings focussed in the balances carried forward and in the requirement of the Schaw-Park decree that the debts on the three branches of revenue be brought together "hereby a full and single accompt may arise yearly, and the whole estate and condition of the University may appear at one view". The inventory on which Italian Book-keeping builds is not readily derived from the charge-discharge system.

The Glasgow faculty in 1776 voted monies for a new chapel and college frontage only to have the Visitors refuse approval till they knew the debt and surplus monies and unappropriated funds available. Anderson protested later that:

> "in the year 1778, in Britain and in a great commercial town, there is an incorporated body, Glasgow College, which keeps its accounts in such a manner that their debt and wealth cannot be ascertained, nor had they a proper bill of arrears nor even an accurate rental."

Some of these needs were met by a simple listing of the securities in the College chest, after noting "in their bosom or on their backs" the fund or funds to which they were appropriated. Anderson was particularly sensitive about misapplications of college funds, for in-

stance to commercial ventures such as canal building. He opposed a contribution of £1,000 to raise a battalion to fight the American rebels. Morthland was expected to clarify the funding and the flows and the wealth in his accounts.

Failure to distinguish personal and cash accounting had significant consequences. The link could be found in the "bills of rest" and the bad debts allowances made every dozen years. Anderson complained that Morthland had only once been able to submit a list of rests or dues unpaid. The balance carried forward in the charge-discharge accounts was thus made up in unknown proportions of debts irrecoverable or recoverable by Morthland, and of excesses of receipts over payments due by him. Undoubtedly he had difficulty in enforcing annual payments of small sums from thousands of debtors. Rentals and tithes were fixed largely in quantities of specific grains, salmon, capons and poultry. These were converted to money at prices struck at "Friars Courts" held each Candlemas, due for payment at Whitsun "with a mark furder for each boll of meal in case of non-payment at or before that term". The 1775 rental still shows cash due in Scots pound, although English sterling had been the legal currency since 1707. Scots money values were shown in the books till 1762. At 1/12 of sterling value, Scots pence and half-pence thereafter appeared as very vulgar fractions in Morthland's very precise accounts. In 1762 there had been a special drive to collect dues outstanding in some cases for 39 years. Morthland at that time was allowed "interest" of £500 Scots for his special expenses.

From 1775 there was pressure for quicker collection, even of very small dues, symptomatic perhaps of a move from networks of debts which remained open at least till death towards a cash and bank transaction society. There was also pressure on stewards and others to operate with smaller or nil balances and to account for interest earned on longer term funds. On one mortification or special fund alone, Morthland suddenly found himself charged with interest over 20 years amounting to £800. The rests or balances outstanding in his other accounts were reduced for ground annuals no longer enforceable at law, and for rents owed by "broken tenants": for the remainder he was forced to grant a bond on which he would have to pay interest. Thus at the same time as there was a new effort to collect punctually and to distinguish each year's income and expenditure, there was an innovation going on in depriving stewards and tax collectors of their banking functions, and concentrating these last in ever fewer specialized firms,

Conclusions

Efforts to prove incompetence or dishonesty against Morthland were far from successful. Anderson's committee found errors of £3, £5, and £2, the largest being a balance of £383 in 1776 which he showed as due from rather than to himself! Formally his rights were secured by his heirs to uplift and appropriate outstanding dues for which he was said to have made 'thankful payment' to the College *(Illustration III).* Such wording, however, Anderson rightly described as a farce which could be dangerous and unjust to the factor. Many another factor of the time was broken on retirement, or relieved of debts for sums which he may never have been able to collect.

In 1782, Morthland retired, Leachman ensuring for him the praise of the faculty and the award of an inscribed plate. (The account for this long remained unpaid). But large sums due in "rests" were then demanded from Morthland, he claiming discharge on grounds of "long service, vast buildings and immense additions to collect revenue". Retrospectively over 37 years, he then claimed expenses with interest accruing, in total exceeding his debt. When this was disallowed he was declared bankrupt shortly before his death. Intricate legal process was initiated against his cautioners or guarantors and their heirs. The degree of specific funding and obligation was investigated by William Keith, a sub-auditor to the court and a fore-runner of the Scots accountancy profession.

ILLUSTRATION III

Morthland's Discharge

7th May, 1761 A.D.—The whichday the Masters of the university having seen and examined the above Accounts in Charge and Discharge given by Mathew Morthland their factor of his intromissions . . . and compared the Charge extending to (£9,587.17/10½ Scots.) with the Discharge extending to (£8,124.4/8 Scots). They find there is resting by the said M.M. to the Masters, the sum of £1,463.13/2½ with which sum he is to charge himself in his next year's Accounts, and which accounts the said Masters do allow . . . and hereby . . . discharge the said M.M., his heirs and executors for the said Cropt and year (excepting the above Ballance.) But also by these presents impower him and his foresaids to uplift and receive what is resting and owing unpaid by those liable in payment . . . and to appropriate the same for his own use in respect he hath made thankful payment to us thereof (excepting the above balance as said is . . .)

Sgd. Will Leechman VR
Adam Smith D.F.
. . . . John Anderson P.N.P.

Source—University Archives 2667.

Anderson after increasing alienation from his fellow professors died in 1796, founding in his Will an 'anti-university', which grew steadily until it was granted a charter as the University of Strathclyde in 1964. An incompatibility was thus imperfectly resolved at this time between accounting systems appropriate to landlords and to the "Tobacco Lords", and other tradesmen of Glasgow with whom Anderson was on friendly terms. Neither the books nor the form of final accounts altered significantly from the tenure of Morthland through that of his immediate successors. Gradually through small sequential changes, income and expediture accounts and balance sheets for the university emerged.

But charge-discharge forms and terms remained long in use in Scotland especially for trust or benevolent funds, (such as that for the Edinburgh Chartered Accountants, where the accounts were thus headed up till 1948. Through the controversy, one can sense the robust simplicity of stewardship accounts, presented for audit for successive periods in columnar form.

FOOTNOTES

[1]Murray, p. 106.

[2]Smith Book I, p. 120 & Book II p. 247.

[3]Precise References to Faculty Minutes, etc. are given in Forrester,, passim.

[4]The accounts and vouchers of the period have been safely stored in the university archives. One voucher of 1756 records the supply to Dr. Black of a Papin's digester which in 1761 proved invaluable in the development of the steam engine with separate condenser. (See Law, pp. 10 & 16). The supplier was James Watt, who had a shop on the campus, and in co-operation with Black patented this improved engine. The transaction of 1756 is recorded in Watt's Day-Books which are preserved in Birmingham (C. F. Swinbank P.)

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ON THE PRESENT AND FUTURE IMPORTANCE OF ACCOUNTING HISTORY

Wichita State University Accounting Research Seminar*

Abstract: A report of a survey on the present and expected importance of accounting history to practicing accountants and accounting educators. The survey appears to indicate that accounting history is, and perhaps will continue to be, a topic of special interest to us—accounting historians.

Accounting historians are only too familiar with the lack of awareness of many accounting practitioners about the study of the history of our discipline. This situation seems generally to persist until practitioners near retirement, when it is almost too late for them to benefit fully from the contributions such a study can make to personal professional understanding and judgment.

Is the interest level among practitioners as low as it seems? The answer, according to a survey recently completed, is: unfortunately yes—and it's not much better among accounting educators!

The survey included public, corporate, and government accountants in entry-level (under five years experience) and senior-level (over ten years experience) positions, plus accounting educators. Questionnaires were distributed by mail to accountants selected randomly from membership lists of professional organizations, and in batches for distribution in offices of ten accounting firms and in several federal agencies. A total of 577 usable responses were received; the overall response rate was 43%.

Respondents were asked to indicate the importance of fifty-seven skill and knowledge areas, including "history of accounting," using a scale of 1 to 5 with 5 indicating "the highest degree of importance" and 1 indicating "no importance or a lack of familiarity." Only the results for history of accounting are reported here. Mean responses were calculated by weighting each response by its scale value.

Table 1 presents these mean responses for the subject area "history of accounting," along with the number of responses and stan-

*Professor Ralph Estes, Leonard Cumley, Dirk Durant, Grace Ebong, Dorothy Hentzen, Mary Herrin, Fred Hilger, Philip Jacobs, Herbert Klaskin, Lawrence Low, Arturo Macias, Carl Nord, Allen Norris, John Patterson, Coleen Siegel, and Leo Waner. A copy of the complete study may be obtained from Prof. Estes, Box 87, Wichita State University, Wichita, Kansas 67208.

Table 1

RATINGS OF THE IMPORTANCE OF ACCOUNTING HISTORY

	Present			Future		
	n	st.dev.	mean	n	st.dev.	mean
Public seniors	66	1.052	2.000	66	1.116	1.985
Public juniors	88	0.949	1.864	88	0.992	1.932
Corp. seniors	111	1.077	1.856	111	1.111	1.829
Corp. juniors	60	1.066	1.683	61	1.131	1.770
Govt. seniors	88	1.154	1.977	87	1.267	2.103
Govt. juniors	71	0.969	1.507	72	0.888	1.500
Educators	86	1.045	2.035	86	1.079	2.151
All respondents	570	1.043	1.858	571	1.086	1.905

dard deviation for each group. The highest ratings for both present and future importance are given by accounting educators, public seniors, and government seniors; these results lend some support to the observation cited above that accountants become more sensitive to the importance of accounting history as they reach senior levels in their careers, perhaps nearing retirement and able to view their profession from a "stateman's" perspective.

All possible pairs of means in Table 1 were compared for statistically significant differences (using a 5% level of significance), with the following results.

> The ratings by government seniors and by public juniors are significantly higher than those by government juniors for both the present and the future.
>
> Accounting educators expect accounting history to be significantly more important in ten years than it is today; this future rating by educators is also significantly greater than the future ratings by government and corporate juniors.

None of the other differences between pairs of means are significant at the 5% level of significance.

These results tend to confirm the suspicion that accounting history is not considered to be important by accounting practitioners in their work. The ratings by accounting educators, as might be expected, are somewhat better, but even educators are inclined to assign a rather low rating. Future projections indicate only a very modest growth in importance.

Now, what practitioners believe is or will be important in their work may differ entirely from what could most effectively be used if they possessed adequate knowledge and skill. We should, of course, be cautious in discounting these results and stubbornly maintaining that accounting history *is* important even if the practitioner doesn't realize it. Nevertheless, the accounting practitioner, like the professional in any field, is largely a product of his or her own education, and unquestionably many accountants have had little or no exposure to the study of accounting history.

Thus these results may be interpreted to indicate that little attention should be given to accounting history in the curriculum, because it is of little practical value to the practicing accountant. But they may also be taken as evidence that considerably more attention to accounting history is warranted, to provide the accountant with knowledge that is useful and important but that is now generally lacking among practitioners. Some would find support for this latter view in considering the discipline of calculus. Recent studies and treatises on accounting education such as Roy and MacNeill's *Horizons for a Profession* have advocated increased attention to mathematics and to calculus in particular; and yet practitioners in our survey generally assigned very little importance to calculus. Although they expect calculus to be more important than accounting history in the future, for the present calculus was rated behind accounting history with an overall mean rating of only 1.716 compared to 1.858 for accounting history.

Is accounting history an esoteric subject of interest to only a small coterie of devotees, or should it be studied by every aspiring accountant? Our results fail to provide the answer, but they do clearly highlight the question.

But our results do permit one safe assertion. Lord Acton said, "Praise is the shipwreck of historians." In this regard, it would appear that accounting historians are in for smooth sailing.

William Holmes, C.P.A.
PEAT, MARWICK, MITCHELL, AND CO.
BOSTON

AN 18TH CENTURY ACCOUNTING PROJECTION FROM PLYMOUTH, MASSACHUSETTS

Abstract: A cost study for the 1768 Plymouth Town Meeting.

The New England town meeting is undoubtedly the oldest show on the American road and, at least in the smaller towns, can still on occasion erupt with fire and brimstone after three hundred odd years. Each year a new cast of local office-seekers play the old traditional roles of Constable, Selectman, Surveyor of Highways, and Fence Viewers and other parts, some of which can be found in the records of small towns in England back into the middle ages.

Every town these days has a Planning Committee, of which there are two distinct types. The first type assumes the task of studying means for moving the town forward, attracting new industry, and broadening the tax base. The second type, indigenous to older wealthy towns, sets itself just as assiduously to means for *not* moving the town forward, *not* attracting new industry, and generally leaving things alone.

I suppose most of us would associate Planning Committees with the late nineteenth and twentieth centuries. The title has about it the flavor of modern management and business education. We would be wrong, though! Although not so designating them, New England towns from the early Colonial days formed the habit of appointing committees to look into projects of one kind or another, often associated with defenses against the Indians or putting the able-bodied poor to work; and some of their reports show commendable Yankee business acumen. The report of one such committee appears in the records of the Town Meeting of Plymouth, Massachusetts for the year 1768.

"We the Subscribers a Committee Chosen by the Town to Consider the affair whether the town will again Improve it again by Keeping Sheep thereon do Report as follows—

We would propose that the Scheme for Keeping Sheep on sd Land be renewed & that the Town as a Town Undertake the Affair

& procure a Suteable number of Sheep with a Shepherd & Erect proper buildings, being Persuaded that altho it would prove Chargeable for the Present yet in the End it would be Greatly Advantagious to the Town, haveing by An Estimate (which will be herewith Exhibited) found that in 3 or 4 years the first Cost will Probably be paid or Reimbused by the price of the wool & the Increase of the Stock, And that Afterwards it would afford a Considerable Yearly Income & be Greatly helpful to Manufacturing so Necessary at this day.

An Estimate of the Charge & Profit of Keeping Sheep on the Sheep Pasture.

Building a House with two Ground Rooms	250	0	0d
Shepherd's Wages pr year	150	0	0
Breaking up two acres of Ground for the Shepherd	13	10	0
Wintering a Cow for him	15	0	0
Price of 500 Sheep & lambs at a Dollar a pair	562	10	0
15 Loads hay for Wintering the Sheep	225	0	0
Incloseing a pasture of 160 acres with Hedge fence	100	0	0
Clearing 30 acres of land at £6 pr acre	180	0	0
Washing & shearing the sheep Includg the Shepherds work	20	0	0
	1516	0	0
The 2nd year			
Clearing 30 acres of land at 6£	180	0	0
Shepherds Wages	150	0	0
Breaking up 2 acres of land for him	13	10	0
Wintering the Cow for him	15	0	0
Washing & shearing sheep	30	0	0
18 Loads hay	270	0	0
	658	10	0
The 3rd year			
The same as ye 2nd year	658	10	0
Addition of 4½ Loads hay at £15	67	10	0
Further Cost about Shearg &e	7	0	0
	733	0	0

The 4th year			
The same as ye 3rd year	733	0	0
Addition of 6 Loads hay	90	0	0
Further Cost about Shearg &c	10	0	0
	833	0	0
Old Tenour	£ 3740	10	0
The 1st years Income			
500 Sheep at 20s. Wool pr sheep	500	0	0
Growth 250 lambs in one year	187	10	0
	687	10	0
The second year			
The wool of 500 sheep	500	0	0
Addition of 150 Lambs at 30s.	225	0	0
The wool from the Lambs	150	0	0
	875	0	0
The 3rd year			
The wool of 650	650	0	0
Addition of 200 Lambs	300	0	0
The Wool upon the Lambs	200	0	0
	1150	0	0
The 4th year			
Ye wool of 850 Sheep	850	0	0
Addition of 250 Lambs	375	0	0
The Wool from the Lambs	250	0	0
	1475	0	0
Old Tenour	4187	10	0
Cost &c	3740	10	0
Balance	447	0	0

So that in the four years Time the house & Sheep Fenceing the Ground & Claring 120 acres of land will be paid for. Their will be a flock of 1100 Sheep & 447£ Clear Gain which may be Sett against Losses & Incidentall Charges not Sett Down in the Estimate, or if

all the 150 acres of fenced Land be Cleard within the 4 years Their will Remain 270£ old Tenour in favour of the Undertakers Besides the Addition of above 300 Lambs at the Close of the 4th year.

Then a Vote was Called to Know if the Town will accept the Said Report according to the Proposall of the Town Procuring Sheep &c. it Passed in the Negative."

Wilber C. Haseman
UNIVERSITY OF MISSOURI - COLUMBIA

MANAGEMENT ACCOUNTING LITERATURE: 1925 AND 1975

Abstract: A comparative analysis of management accounting articles from the technical journals of the National Association of Accountants in each of the periods 1919 to 1925 and May to June 1975 discloses changes in the nature of the articles and of their authors.

Several advances in Management Accounting have been made in the past few decades. The modern managerial accountant is called upon to do things which his antecedent probably never even heard of. For many companies, the computer has revolutionized the recording and analysis of data about the past and present. With new simulation techniques, managerial accountants are now reporting with considerable accuracy many things that will happen in, and to, their companies even before the events take place. It is not uncommon to find accountants in industry using linear programming, regression analysis, Monte Carlo methods., PERT, the learning curve, and input-output analysis. We seem to be entering the era of the information explosion, where information becomes the critical element for success in all types of economic endeavor, where competition reduces itself to a rivalry over better and more timely information.

Reflecting on these developments, one would expect that management accounting literature also would change. What were managerial accountants writing about, say, 50 years ago? Who were writing the articles? How did they express themselves? Were the managerial accounting issues of that time greatly different, and in what ways from those of today?

Purpose of Study and Summary of Findings

The purpose of this study was to determine how managerial accounting literature has changed during the last 50 years. The main findings of the study may be summarized as follows:

1. Managerial accounting literature has become much more prolific.

2. Titles to articles have become somewhat shorter but less definitive.
3. Managerial accounting literature now covers a wider range of topics.
4. A larger proportion of the authors are now from academic life and a smaller proportion from business and industry.

Sample Selection

The first articles published in the technical journals of the National Association of Accountants were reviewed and compared with a similar number of articles published most recently by this Association. In those days the Association was called the National Association of Cost Accountants and the publication was a 5¾″ x 8¾″ semi-monthly magazine of some 15 pages called simply *Official Publications.* The journal title, *NACA Bulletin,* was used starting in September 1925. The rather odd number of 104 technical articles was chosen because it included all the technical articles published at a particular point in time. If 100 had been chosen, a decision would have to be made regarding which four titles to omit from the latest monthly journals. The technical articles included in the study did not include Association Announcements or similar presentations of a non-technical nature.

The first 104 technical articles published by the Association spanned a five year time period 1919-1925, roughly 50 years ago. The most recent 104 technical articles, used in this study spanned a time period of only eight months, May-Dec. 1975. From this it seems clear that managerial accounting literature has become much more prolific. One might speculate that this reflects at least two things. First of all, the field of managerial accounting may have advanced to a position of greater importance in our society so that more people need to know about the subject. Secondly, the subject may have become more complex so that more needs to be said about the subject to the people that need to know.

Identification of Topics Presented

The various topics appearing in managerial accounting literature can be identified in a number of different ways: (1) by examination of titles, (2) by searching the body of the article, (3) by focusing attention on the stated purpose of the article, or (4) by focusing attention upon the conclusion or summary of the article. In this study,

topics have been identified mainly by examination of titles used. This worked rather well for articles appearing in the 1919-1925 period because titles were definitive and straight-forward.

For some articles appearing in 1975, the published titles did not make clear the topics within. For example, the titles "Silver Spoons" and "Counting Chickens Before and After They Hatch" hardly make clear that the topics within were "Cost Accounting for Sterling Silver Flatware Manufacture" and "Internal Control Procedures in Chicken Farming." In these and other instances where titles seemed unclear, articles were scanned to identify the topics covered. In most instances, however, topics have been identified simply by examination of titles.

Keys Words Analysis

Topics identified from the various technical articles were classified using a type of key word analysis. First of all, each title was reduced to its primary words by eliminating all articles (i.e., it, a, the, their), prepositions (i.e., an, on, at, near), and conjunctives (i.e., and, but, therefore). Next, primary words were classified according to a reduced number of key words or key concepts recognizing the similarity in meaning of certain words or groups of words. For example, the key word MEASURE was used to represent all those words with an idea relative to some step in accounting measurement such as "calculate" or "calculation," "distribution," "allocation," etc. Similarly the word METHOD was used to represent all those words with an idea relating to some orderly process such as "system," "model," "procedure." The key word AN INDUSTRY was used in a slightly different context to refer to all those many instances when a specific industry or class of business was cited by name. In this general manner, a limited number of key words was identified for each group of technical articles and many of the same key words appeared on both lists.

Certain words or concepts appeared more often than others. The frequency of occurrence of these key words was used as an indication of the importance of the topic to managerial accountants at that point in time. The variety of key words was used as an indication of the breadth of topics considered relevant to the professional field of managerial accounting at that point in time. Although the approach was somewhat subjective, it provided at least some basis for answering the questions posed earlier regarding changes in managerial accounting literature.

Figure 1

Key Words Most Commonly Used in 104 Titles to Managerial Accounting Articles (number of times used)

from 1919-1925		*Rank*	*from 1975*	
COST	69	1	ACCOUNTING	23
AN INDUSTRY	50	2	ANALYZE	20
ACCOUNTING	30	3	AN INDUSTRY	14
FACTORY	26	4	PROFIT	11
METHOD	20	5	METHOD	10
USES	16	6	MEASURE	10
MEASURE	12	7	INFLATION	9
MANAGE	10	8	COST	8
LABOR	8	9	CORPORATION	8
ANALYZE	7	10	MANAGE	8
OVERHEAD	7	11	FINANCE	8
PRINCIPLES	6	12	PERFORMANCE	7
STANDARD	6	13	DISCLOSURE	7
PERFORMANCE	5	14	TAX	7
ORGANIZATION	5	15	INTERNATIONAL	7
SCRAP	5			

Other key words used more than two times

budget, bibliography, information, material, statistics, volume

EDP, uses, LIFO or FIFO, cash, investment, present value, labor, law, lease, small business social action

Length of Titles

Technical articles during the 1919-1925 period employed somewhat longer titles than those of the 1975 period, and appeared to communicate more clearly the content within.

Figure 2

Number of Words in Titles of Accounting Technical Articles — 1920's & 1970's

104 titles	*from 1919-1925*	*from 1975*
All words	644	496
Primary words	441	367
Different key words	59	61

The average number of words per title was higher for the 1919-1925 titles in terms of primary words and key words as well as all words.

Figure 3

Length of Titles
(average number of words per title)

104 technical articles	*all words*	*primary words*	*key words*
from 1919-1915	6.2	4.2	2.9
from 1975	4.8	3.5	2.3

The reason why modern titles have been shorter may be a matter of style, a part of the move toward cryptic titles mentioned earlier. This also may reflect a change in the type of individuals who are authors.

Variety of Topics

Technical articles during the 1919-1925 period seemed to be concentrated upon a narrower range of topics than those of the 1975 period. This strongly suggests that the topical boundaries of the field of management accounting have been expanded over the years. Figure 4 shows that 44.2% of the primary words used in the 1919-1925 titles were concentrated upon five key words. This compares with only 21.3% in the 1975 titles. Furthermore, the same relationship holds for the ten and the 15 most common key words.

Figure 4

Variety of Topics
(percentage of total primary words)

titles of 104 technical articles	*five most common key words*	*ten most common key words*	*15 most common key words*
from 1919-1925	44.2%	56.2%	62.8%
from 1975	21.3%	33.0%	42.8%

There is additional evidence that the topical boundaries of management accounting are wider now than in the 1919-1925 period. A scanning of Figure 2 will indicate that the key words of the 1919-1925 period are strongly concentrated in the topical area of *factory cost accounting* (determining the factory cost of products), whereas the key words of the 1975 period range over a much wider variety of areas including "profits" (as distinct from costs), "analysis" (as

distinct from mere measurement), and such wide ranging topics as "inflation", "taxation", and "international". Two-thirds of the 1919-1925 titles used the key word COST; less than 8 percent of the 1975 titles used that key word. For 1975 no single key word appeared in more than 23 percent of the titles.

On the other hand, it was a bit surprising to discover among the 1919-1925 articles some topics with a very modern flavor. For example the following four titles published in 1923 might appear to be of a much more recent vintage.

1/15/1923 "Prices, Profits, & Production (How to Determine the Effect of Manufacturing Effort and Volume on Costs, Selling Price, & Profits)" by A. F. Stock & M. B. Gordon, Lybrand, Ross Bros. & Montgomery, New York City.

5/1/1923 "Standard Costs—How to Establish & Apply Them" by William F. Worrall, International Silver Company, Meriden, Conn.

6/15/1923 "Should Material be Charged at Cost or Replacement Value?" by Charles F. Rittenhouse, Chas. F. Rittenhouse & Co., Boston, Mass.

8/15/1923 "A Punched Card System of Inventory Control" by W. V. Davidson, Davidson Systems, New York City.

Accounting Practices in Specific Industries

Almost half of the 1919-1925 titles described accounting practices in a specific industry identified by name. This tradition still appears among the 1975 titles, but much less prominently (less than 14% of the titles). It is quite natural for a professional accountant, writing about what he knows best, to refer to his day-to-day experiences. It is also an effective way for professional accountants to assimilate ideas being imparted by others. Therefore it is logical that this approach would continue over the years; in fact it is somewhat surprising that a larger proportion of today's technical articles, are not written in that practical style. One might conjecture that one reason why that style has become less popular is because of changes which have taken place in who writes the technical articles, and who reads them.

Identification of Authors

An analysis of the authors of NAA articles revealed some interesting things. In the early years of the Association, accountants in

industry wrote a larger proportion of the technical article than they do today. In 1919-1925 several of the accountants in industry were engineers by training and the title, cost engineer, has rather commonly used. While some of the authors in those early days were from public accounting firms, an equally large number were from engineering firms. Articles written by teachers were much less prominent than they are today.

There was some problem in identifying the nature of the authors in the 1919-1925 period since very little biographical information was given. Only 74 of the approximately 110 authors and co-authors could be classified. In 1975, biographical information was more complete so that all of the 112 authors and co-authors could be classified. The percentages in Figure 5 are based upon the total number of authors which could be accurately classified.

Figure 5

Authors of NAA Articles
Classified by Professional Orientation

	1919-1925	*1975*
Accountants and Engineers in Industry	46%	35%
Public Accountants	20%	19%
Members of Professional Engineering Firms	12%	0%
Teachers	10%	36%
Other	12%	10%
Total	100%	100%

Figure 5 rather clearly indicates that important shifts have taken place in the authorship of technical articles in management accounting. The shift has been away from the practical arena of applied accounting to the academic arena of accounting theory. Whether this shift is a progressive one, and what are the causes which underlie it cannot be answered by this study. One might also raise the question: Who reads the technical articles in management accounting? Undoubtedly some important shifts have taken place there as well.

Conclusions

Major changes have occurred in management accounting literature during the last 50 years. This literature is now much more prolific, and covers a considerably wider range of topics. Titles to

articles have become somewhat shorter, but are less definitive. A larger proportion of the authors are from academic life and a smaller proportion from business and industry. The reasons for these changes have not been established by this study, yet it seems probable that the causes are linked with an expansion in the boundaries of what we call management accounting and an ascending importance of management information, the critical output of our profession.

Charles E. Sprague

OUTLAY AND INCOME*

Abstract: This early address by Sprague, who is acknowledged as a telling influence among pre-classical American accounting practitioners and thinkers, previews the insight and sophistication which is set forth in his famous *Philosophy of Accounts.*

I cannot agree with those who teach that the profit and loss account contains on one side losses and on the other side profits. There are even purists who object to the title "profit and loss," on the ground that its two nouns are misplaced, and who would call it "loss and gain," evidently thinking of it as a column of losses and a column of gains. But if the book-keeping is that of a business concern, then the expenditures made under such heads as Insurance, Interest, Office-Expense, Salaries, Commissions, Brokerage, Rent, &c., are in no sense losses; they are business outlays deliberately made for the purpose of producing income which it is hoped will exceed the outlay. This is the essence of business as distinguished from private or professional life. Outlay for the sake of income is business; income for the purpose of meeting expenditure is not. Therefore I contend that the profit and loss account is a unit. It is composed of outlay and income, not of losses and gains. When the results of outlay and income have by its agency been compared and the excess ascertained, then and not till then do the books show a profit or a loss. Profit and loss is therefore named in the correct order, since its result is, normally, profit.

Books could be kept and by strict double-entry in which none of these accounts of outlay and income, these tributaries to the profit and loss account should appear. The equation between liabilities plus proprietorship, on the one side, and assets on the other would be preserved just as strictly as now. If an entry comes up involving outlay, and it be asked to whom or what this shall be charged, then, supposing Mr. Smith to be the proprietor, the answer would evidently be, charge it to Mr. Smith, and this would be in a certain way correct; it would bring out correctly the final result, "how much is Mr. Smith worth?" But such a method would possess no advantage over single-entry, except that of furnishing through the trial-balance a

*A lecture delivered before the Institute of Accounts, October 16, 1889.

proof of accuracy. While indicating the status, it would throw no light on how that status was arrived at; it would be barren of any lessons to point out the causes of success and of failure. The accounts of which I am speaking are intended to supply just this want. They give the ideal side of events, classifying events by their tendencies rather than by the material and personal elements involved. While they are somewhat artificial, yet they tell, or ought to tell, a true story.

The artificiality of profit and loss and its tributaries results partly from their relation to time. The reciprocal action and reaction of outlay and income are continuous, but for convenience we treat them as periodical. We are compelled to cut them into even lengths for purposes of comparison. To make it most efficacious, the profit and loss account should give clearly the amount of each class of outlay and income for a certain unit of time, and in such form that their relations to each other can readily be seen. But if these precepts be not observed to each other can readily be seen. But if these precepts be not observed it is easy to destroy entirely the usefulness of the account. I will speak of some faults in this respect which I have noticed.

A common fault is to make of this account a reservoir into which is thrown in confusion anything, if we don't know where else to put it. I do not believe in carrying anything "to profit and loss" direct. Nothing should go there except through a regular channel of classification—that is to say, through one of the outlay or income accounts. I would keep profit and loss account closed until at the end of the fiscal period it is reopened by transfers of the balances of its tributaries. It is exasperating, in examing books, to find the usefulness of the profit and loss account muddled away by this practice of carelessly dumping miscellaneous entries into it at all times, so that the important totals of outlay and income are smothered among a mass of unrelated odds and ends. Bad debts are especially apt to be huddled indiscriminately into the reservoir, instead of the more scientific way of offsetting them by a reserve account, which may be based upon judgment as to each doubtful account or upon an assumed percentage. In either case, I think it advisable that the amount so reserved during the period be stated in the profit and loss account in a single net sum. There should be no odds and ends, no etceteras in the profit and loss account, as it exists purely for purposes of classification, so every line in it should comprise an entire class of outlay or income.

I frequently observe that the outlay accounts are insufficiently subdivided: especially is expense account too often made a "res-

ervoir." No efficient control of expenses can be kept unless they are subdivided to a reasonable degree. If this is done any unusual increase in expenditure of a certain kind attracts attention. If our bills for fuel or for light, or for packing-boxes are greater than last year we ought to know whether the increase is justified by any change in price or in amount required for consumption, while the same increase distributed over the "bunched" expenses and perhaps partly offset by some retrenchments would not attract attention. A firm in New York was robbed of nearly $50,000 in a few years by falsified bills for packing-boxes. It is manifest that the large expense account of this firm was too much "bunched," otherwise it would have been evident that so many boxes could not possibly have been used. Among my own books (savings-bank) I keep an expense-book, divided under the following heads: Salaries, stationery, advertising, fuel, light, communication and protection, supplies and cleaning, taxes, insurance. Bank Department assessments, legal and miscellaneous. The latter heading very seldom contains an entry. The book is subdivided so that each of these headings occupies as many pages as experience has shown necessary, and a leather tag indexes it at each subdivision. Full particulars of each purchase or other expenditure are given, as in invoice-book, making it easy to refer for comparison of prices or ascertaining the source from which some article had previously been ordered. The expense account in the general ledger is posted monthly without subdivision.

As the outlay and income accounts are statistical they are frequently posted only monthly by totals, especially when the columnar form of posting medium is used. Provided the subdivision be adequate, I prefer it to separate postings. But where this plan of monthly totals is followed another reform may be made. The outlay and income accounts may be put into a tabular form far more compact than that of the account and considerable turning of leaves may be avoided. This tabular statement may thus constitute the profit and loss account. I have employed with success a form something like the following, the outlay accounts above and the income accounts below (Fig. 1).

This form is, I think, more instructive and comprehensive than where each account appears on a separate page. I have not brought in the purchases and sales until the close of the period for obvious reasons. I may say here that it seems to me preferable, in respect to merchandise, to keep the outlay and the income in two separate accounts, purchases and sales or merchandise and sales. This also facilitates the handling of returned goods. Perhaps if this is done, it

Outlay.

Jan.	Feb.	March.	April.	May.	June.	Total.	
							Office expense.
							Rent.
							Advertising.
							Brokerage.
							Total.
							Net profit distributed.

Income.

Jan.	Feb.	March.	April.	May.	June.	Total.	
							Commissions.
							Interest.
							Total.
							Mdse. profit.

Fig. 1.—Form for Outlay and Income Accounts.

would be better to bring into the profit and loss account not the net margin on goods sold, but the entire sales on the one side, and on the other the cost of the goods sold (old inventory + purchases — returned to seller — new inventory.)

(The lecturer further illustrated the tabular form of profit and loss account by two examples from his own experience. The first represented the accounts of a hotel, where an inventory of all property was taken at the close of every month and the outlay and income analyzed. There were no accounts on the ledger in the usual form for outlay or income, but a double page in tabular form, of which the following is a portion:

	(A.) Cost.	(B.) Deductions.	(C.) Inventory beginning of month.	(D.) Inventory end of month.	(E.) Consumed.
Marketing					
Groceries					
Liquors					
Provisions					
Ice					
Coal					
Gas, &c.					

Fig. 2.—An Outlay Account for a Hotel.

The relation of these columns is as follows: (A) — (B) + (C) — (D) = (E).

The other example was from a periodical publishing business. There being no inventory, there were only three columns to each month, but a fourth column gave the accumulated total to and including that month.

May, 1889.				
	Expenditure.	Deduction.	Net cost.	Total outlay for five months.
Literary				
Artistic				
Paper				
Composition ..				
Engraving				
Press-work ...				
Commissions . &c.				

Fig. 3.—Outlay Account for Periodical.

In this case many questions were asked which resulted in nearly the whole of the system being described, the books being highly specialized and quite unconventional. The principal book of original entry was an interleaved check-book. On the left-hand page, corresponding to the stub of the ordinary check-book, were the records of deposits and checks, made explicit as to the source from which received and the purpose for which paid. The right-hand page contained, first, the petty cash account and then two distributing columns, into which all the receipts and payments were side posted: amounts of the same kind being written, not in different columns but in different sections of the same column. The accumulated totals of each were carried forward to the top of corresponding sections on the next page until the close of the month. The two narrow money columns, on the left of Fig. 3, were ruled in very narrow horizontal lines and used for collecting together a few items of the same kind. There is sometimes a subdivision of outlay or income which does not have entries enough to make it worth while to run a separate column or section for it, yet there must, in the tabular form, be a way provided for regularly consolidating these.)

	Receipts.	Deduction.	Net proceeds.	Total Income for five months.
Subscriptions .				
Advertisem'ts .				
Back numbers.				
Current numbers				

Fig. 4.—Income Account of Periodical.

Outlay or income frequently appears in successive stages, as in the following example. In an establishment regularly using coal as one of its branches of outlay, a certain number of tons are—

1. Bought and delivered in January.
2. Paid for in February.
3. Consumed during the three months ending with March.

A certain grade of book-keepers would pay no attention to the transaction until the cash payment in February. In a monthly statement of outlay and income it would then appear that there was no outlay for coal in January nor in March. Another book-keeper, of a higher grade perhaps, would make the entry when the coal was bought, thus recognizing the liability correctly, but as to outlay would be equally wrong, as he would show all the outlay to have been in January. A third book-keeper would make consumption his gauge, not delivery nor payment; and he, ascertaining as nearly as possible the amount on hand at the end of each month, and consequently the amount consumed, would spread the outlay over the three months. But in the long run these three would be identical. The book-keeper would be justified in employing all three of these ways of treatment, according to the nature of the case and the importance of the amount. I merely object to such a method as confuses the outlay of different periods where it is important to know it.

So, too, in interest receivable. It assumes the forms of interest accrued, interest due and cash, and if an exact account of earnings and assets is to be kept these must be distinct. I do not say it is always necessary to keep such an exact account, for at the best book-keeping is but an approximation, and no accounts ever were or will be absolutely exact.

(A free discussion followed in which many of the members of the institute participated and which drifted at times far from the subject of the lecture, but was always interesting and instructive. It is noteworthy that the words debtor and creditor, or debit and credit, were not once used in the lecture or in the discussions.)

Kenneth O. Elvik, Editor
IOWA STATE UNIVERSITY

BOOK REVIEWS

David Hackett Fischer, *Historians' Fallacies* (New York: Harper & Row, 1970, pp. xii, 338, paperback, $3.95).

Reviewed by Orace Johnson
University of Illinois at Urbana—Champaign

The author should have addressed practicing accountants and auditors explicitly, as well as teachers of history, when, near the end of this tract on the logic of historical thought, he wrote:

> "Each day, every rational being on this planet asks questions about things that actually happened—questions which directly involve the logic of inquiry, explanation, and argument which is discussed in this book. . . . This common everyday form of historical thought consists of *specific inquiries into small events, for particular present and future purposes* [emphasis added] to which all the academic monographs in the world are utterly irrelevant." (p. 316)

While "academic" as used here seems a bit pejorative, and "utterly" is surely an exaggeration, in the popular connotation of the term this book *is relevant* to everyone in the accounting profession —whether teacher, researcher, or practitioner—who makes (1) specific inquiries, into (2) small events, for (3) particular purposes.

The author's stated purpose was "not to compile a catalogue of all fallacies which historians *might* commit, but rather to collect a few common fallacies which actually occur in historical thinking, and to extract a few rules of reason from this experience." (We could surely use such a compilation from accounting literature!) "The thesis of this book is . . . that historians, and all men who seek to think historically, tend to make certain assumptions in their work, and that these assumptions have logical consequences which must be respected . . . Logic is not everything. But is *is* something— something which can be taught, something which can be learned, something which can help us in some degree to think more sensi-

bly about the dangerous world in which we live." (p. 306) In my judgment, the author has succeeded exceptionally well.

The contents of this book are divided into three parts as follows:

(1) *Inquiry,* including three chapters on fallacies of question-framing, factual verification, and factual significance;
(2) *Explanation,* including six chapters on fallacies of generalization, narration, causation, motivation, composition, and false analogy;
(3) *Argument,* including two chapters on fallacies of semantical distortion and substantive distortion.

Each of the 113 different kinds of actual fallacies discussed in the 11 chapters is richly illustrated with examples which are carefully analyzed to establish the precise nature of the fallacy. (Not enough examples, however, are taken from accounting and related business fields where they surely exist in abundance.) Then each chapter concludes with positive principles, affirmative axioms, criteria, and occasionally pious platitudes—in total, 83 "rules of thumb . . . that good historians feel in their bones and apply without thinking. If such rules are raised to the level of consciousness, practices might hopefully improve." (p. 63)

The concluding section of this tract emphasizes that a study of history can be useful to (1) clarify the contexts of contemporary problems, (2) establish trends, directions and prospects, (3) refine knowledge of theory, (4) help us to find out who we are, and (5) teach us how to think historically. These uses are improved where logical fallacies are reduced. For example:

In Chapter 2 on fallacies of factual verification, one of the eleven kinds discussed is the fallacy of pseudo proof. The author writes this paragraph:

> In a book entitled *Cities in Revolt* (New York, 1955) Bridenbaugh argued that Bostonians were heavily taxed in the period 1743-1760. His evidence consisted in an exclamatory assertion that "at the close of this period the levy on the 'Estates Real and Personal' of Bostonians amounted to 13s.6d. in the pound, or 67 percent!" But this statement, in itself, tells the reader nothing. Were those thirteen shillings and sixpence extracted from a pound of property at market value or from an assessed valuation of estates? Bridenbaugh doesn't tell us. Let us assume the latter, which was probably the case. If so,

> what were the assessment rates in proportion to real value—100 percent? 50 percent? 5 percent? If rates were high the Bostonians were very heavily taxed, in whatever year Bridenbaugh found his figure. But if they were low, then the Boston tax rate might have been absurdly small. Bridenbaugh's "fact" helps us not at all to clarify the confusion. As it is presented to the reader, it has no more evidential value than the exclamation point which ends his sentence." (pp. 43-44)

The most important result from a careful study of this book will be an improvement in actual thinking about (1) specific inquiries into (2) small events for (3) particular purposes. What could be more practically relevant than that?

Kapadia, G. P., *History of the Accountancy Profession in India* (New Delhi, The Institute of Chartered Accountants of India, 1973, pp. 460).

Reviewed by Cadambi A. Srinivasan
Drexel University

This book proposes a theory regarding the origin of accountancy in India, and describes in great detail the growth and functioning of the accounting profession since 1857 when the first Company legislation was placed on the Statute book. The book is organized into seven chapters.

Chapter One (pp. 1-28) outlines the system of land tenure, currency, trade, and various occupations as well as the general social and economic conditions prevailing in India during the Vedic period (about 3000 B.C.), to indicate the existence of a developed system of record keeping. Based on this and other evidence, the author concludes that "the art and practice of accounting, as a highly developed system, was in vogue in India even during the times of the Vedas."

Fiscal enactments—specifically, legislation relating to companies on account of their requirements dealing with the accounts and audits of corporations—have had a significant impact on the development of the accounting profession in India. Chapter Two (pp. 29-74) traces the history of Company legislation from 1857 till the enactment of the Companies Act, 1936, and describes the impact of each of these legislations on the gradual evolution of the profession.

Chapter Three (pp. 75-150) traces the growth of the profession during 1930-1948, and the stages through which the Indian Accountancy Board came to be established. The Board was constituted of selected persons representing interests principally affected or having special knowledge of Accountancy in India to advise the Governor General in Council on all matters of administration relating to Accountancy and to assist him in maintaining standards of qualification and conduct required of auditors.

Chapters Four and Five, (pp. 151-229) describe the recognition by the Government in 1948 that the stage had arrived for the profession to assume responsibility for the maintenance of the requisite standard of professional competence, discipline, and conduct of its members. The subsequent passage of the Chartered Accountants Act in 1949 established an autonomous Institute of Chartered Accountants of India, and created a council thereof to manage its affairs. The council was to be composed of persons elected by the members of the Institute. The Institute was empowered to serve both as an examining body as well as a licensing body.

Chapter Six (pp. 230-446) deals with the major problems the Institute of Chartered Accountants had to attend to. The need for ensuring the quality of input into the profession, for members' continued education and training, and the necessity to build a code of conduct for the general membership are some of the more important concerns discussed.

Finally in Chapter Seven, entitled "Behold Thy Future," the author emphasizes the need for the service-oriented accounting profession to be in tune with changes in the economic and social order. He focuses on the need to "expand the scope of the audit and making audit a tool for full information to be given and for a test of the principles of propriety and efficiency." In fulfilling this expanded role the primary consideration of the profession should be social responsibility and ethics.

This book is the result of a mandate of the Council of Chartered Accountants of India assigning to the author the task of writing the history of the profession in India. Having been the nerve center of the profession and the first elected president of the Institute, the author is uniquely qualified to perform the task. The book is extremely well written and provides an excellent historical perspective. The book is highly recommended to the interested reader.

Michael Chatfield, *A History of Accounting Thought,* Revised Edition (Huntington, N.Y.: Robert E. Krieger Publishing Company, 1977, pp. vi, 316, $16.50, in paperback, $9.50).

Reviewed by Richard A. Scott
University of Virginia

The original edition of *A History of Accounting Thought* was published in 1974.* A Revised Edition has now been issued. Each of the twenty chapters has an extensive bibliography, the updating and expansion of which represents the "revision." Only minor revisions have been made to the book's contents. Chatfield's work draws from many important pieces in the literature and consequently is heavily footnoted, although not to the point of distraction. The original edition was criticized for having reprinting and typographical errors. A new publisher seems to have satisfactorily corrected these.

Despite its title this book is a select exposition of the ideas, literature and events which have been most important in the development of accountancy. It does not merely present the views and thoughts of prominent individuals as the title might suggest. From the chronology of events and tide of forces that constitute history the author has discriminately chosen certain elements to write about which have been most influential in bringing about the here and now in accounting. Furthermore, these elements have been skillfully woven together so that the reader is offered more than a descriptive account of the times. As various sections unfold they are forged into a linkwork that joins the present with the past and produces a sense of understanding. The book's predominant purpose is to consider why we are in our present place and condition; in so doing the relevance of history to contemporary accounting problems becomes a matter of paramount importance. Because the author has been selective and discriminating in this work it necessarily ought to be viewed as interpretive. However, his interpretation of history is excellent and the outcome is not parochial.

The first seven chapters that make up Part 1 of the book are a history of bookkeeping from the earliest times of man. Part 2 focuses upon the rationalization of accounting that came about with the Industrial Revolution. In the eight chapters of this middle section the development of budgeting, cost accounting, income taxes, and auditing are related. The final section, Part 3, is a five-chapter

*See reviews in: *The Accounting Historian,* July 1974, p. 5, and *The Accounting Review,* April, 1975, pp. 418-19.

segment that examines the development of principles and formulation of accounting theory such as it is. A history of accounting perforce ranges over a wide variety of subjects. The author has written of them in a way that is scholarly in construction and content, and with a style that is easy to read.

In the hardcover version the quality of paper, binding and printing is good. A softcover version is also available. Chapter layout and length—each is quite short—facilitate reading. This text could be employed to advantage in an accounting theory class where an early portion of the semester is set aside for a review of accounting history. Used as a text for a course in accounting history it would require a substantial amount of supplementary material, much of which could be selected from Chatfield's bibliography. Any member of the world of accounting, be they academic or practicing, should have this book in their library.

The Institute of Certified Public Accountants of Greece, *The Institution of Public Accountants in Ancient Greece.* (Athens, Greece: The Institute of Certified Public Accounts of Greece, 1963, pp. 17).

Reviewed by Diana Flamholtz
Loyola Marymount University

This small pamphlet attempts to describe the role of public accounting in the administrative and economic system of ancient Greece. It was written for the Exhibition of European Accounting History held in Edinburgh in September, 1963. The Archeologist of the National Archeological Museum of Athens, Mrs. Dina Delmouzou-Peppa, prepared the treatise which is based on some inscriptions from the museum as well as texts of ancient Greek writers.

Due to lack of source material for other parts of Greece, the pamphlet concentrates solely on Athens. The author first describes the political democracy on ancient Greece, for it was this system which necessitated the development of procedures for accountability in the handling of public funds. She then deals with the three basic boards which audited the performance of magistrates, the Council Accountants, the Administration Accountants, and the Examiners. A short final section tries, on the basis of very limited evidence, to deduce what sort of men would have held these positions.

The basic source materials used are those found in most works on this area, namely the writings of Aeschines and *The Constitution of Athens* by Aristotle. Therefore, to the specialist in this area of

accounting history the greatest interest of this treatise lies in its use of inscriptions from the National Archeological Museum of Athens. Although not numerous, the translated inscriptions do enrich the basic outline established through other source materials. In addition, five black and white plates showing some of these inscriptions are of interest. The general reader, wanting to learn something about accounting in Ancient Greece, might use this pamphlet. However, the recent articles by George Costouros in this journal offer a clearer and more comprehensive treatment of the same topic.

Max Lion, *Geschichtliche Betrachtungen zus Bilanztheorie bis zum Allgemeinen deutschen Handelsgesetzbuch,* Osaka, Japan: Nihon Shoseki, Ltd., Reprint edition 1977; (Berlin: Carl Heymanns Verlag, 1928), 39 p., $12.50 (printed in German)

Reviewed by Norlin G. Rueschhoff
University of Notre Dame

This book, published in German, presents an historical view of accounting theory from the fourteenth century up to the time of the first German Commercial Code in 1861. It is a reprint of a book written in 1928 by a lawyer holding a university lectureship at the Commercial College of Berlin. The book has six chapters.

In the first chapter is a chronological listing of the references used in the study. The references include not only Italian, German, Dutch, French and English textbooks, but various other literary and official documents from what is now the European Common Market area. Each reference listing is accompanied by some brief remarks which show the development of some basic balance sheet and income statement concepts.

The first topic covered, in Chapter II, is inventories. Under single-entry bookkeeping, a periodic inventory had to be taken in order to compute a profit. The advent of double-entry bookkeeping in the fifteenth century fostered the practical development of the perpetual inventory system. That the perpetual inventory system required a physical inventory verification for balance sheet valuation purposes was not clearly set forth in theory however until the sixteenth century.

The next chapter, Chapter III, deals with the balance sheet. In the 15th century (Pacioli's times) and the 16th century, the balance sheet was basically a trial balance. The computation of the profit

and loss was most important and the balance sheet accounts were residuals. Inventory was also quite important and specifically dealt with in 18th century texts. The reason for the importance of inventory valuations was the early concern for the proper determination of a merchandise profit or loss.

Chapter IV deals with valuation problems. Up until Savary's management text was published in French in 1675, there appeared to be no clearly distinguishable valuation theory. The development in practice showed some significant variances specifically presented in three examples, namely, (1) the calculation of the capital balances of the Fugger firm in 1527 after seventeen years to determine the firm's distributions upon the founder's death; (2) the biannual closings of the Haug firm's books during the 1543-1562 period, and (3) the use of a "retail method" valuation at sales price less 10% by the Schickler firm of Berlin in 1795. In these examples and in the literature of these times, cost valuation was most often used. Appraisal prices were utilized occasionally. The "lower-of-cost-or-market rule" first appeared in 1675 and is treated historically in the next chapter.

The main origins of the rule of "lower-of-cost-or-market" were the theoretical presentation in Savary's textbook in 1675 and the practical requirement set forth in the Prussian Federal Law of 1794. The difference in dates shows the considerable length of time before the rule's use became widespread.

The final chapter provides a brief discussion of (1) receivable write-offs and (2) depreciation. Both of these accounting policies were long utilized in practice in the sixteenth, seventeenth, and eighteenth centuries, yet the 1861 German Commercial Code gave no heed to them. Theorists did not consider them in their texts until 1865 when Savary published his text; however, depreciation was treated by Magelsen as early as 1772. Until then, plant property accounts were often intermingled with the inventory accounts.

In total, the book is rather brief and covers some very simple concepts. The book's main asset is its very clearly presented chronological listing of excellent European references on accounting theory and practice. As a reference source, this book might be quite useful to the scholar of accounting history.

Index to Federal Tax Articles, edited by Gersham Goldstein in collaboration with Boris I. Bittker (Boston: Warren, Gorham & Lamont,

1975, $145 for the main volumes and one year's supplementation; $145 per year thereafter for four quarterly cumulative supplements.)

Reviewed by Gary L. Maydew
Iowa State University

This very comprehensive index of tax articles covers federal income, estate, and gift tax articles that have been published since 1913. The periodicals indexed include, in addition to the legal publications, a number of accounting and economic journals.

The index consists of: (1) a user's guide, which includes a list of the topical index headings, a key to the abbreviations of periodical titles, and a list of the periodicals searched, with the dates of the first and last article cited from each periodical, (2) volumes I-III which are the author and topical indexes, and (3) a one year supplementation index. Quarterly supplements have been issued since.

I used the series to do research in some areas of taxation and found the topical index relatively easy to use. A table of contents would have been helpful, but the lack of it is not a serious hindrance, given the comprehensive topical index. The cross-indexing appears to be thorough; i.e. all of the logical title descriptions to the areas I researched were indexed.

An interesting feature of the index is that the articles within each topic are listed in reverse chronological order. This will aid the researcher in deciding which articles are relevant to his problem. The cumulative index is also in reverse chronological order, and appears equally thorough. Given the dynamic nature of tax, the quarterly supplements are a valuable feature of the service.

It seems likely that tax practioners would find the various tax services to be a more efficient means of answering most technical questions than would be this index. However, with respect to tax planning and explanations of the significance of litigation, the articles indexed would be of great assistance to tax practioners. For those doing academic research, the index promises to be an invaluable time-saver.

Maureen H. Berry, Editor
UNIVERSITY OF ILLINOIS

DOCTORAL RESEARCH

This group of dissertations deals with varied and interrelated aspects of generally accepted accounting principles. We commence with Maloo's overview of the GAAP life cycle process and continue with Galliart's study of factors influencing a large segment of accounting theory and practice: that of income reporting. Environmental influences also form the basis for Frey's investigation of whether the thrust for development of accounting principles and auditing standards comes from within or without the profession. One significant source of influence on accounting theory and practice is tax law—just how significant the development of federal income tax regulation was for accounting is the subject of McClure's research. Along these same lines, Hughes examines one particular accounting problem: that of accounting for goodwill, and traces the interrelationships between accounting theory and tax regulations on this topic. This focus on particular accounting problems continues with Lambert's assessment of the user benefits of an accounting principle, yet to be generally accepted, in his study of the effects of general purchasing power information on commercial bank loan officers' decisions. We conclude, still with users in mind, by shifting the scene from the future to the past. We consider a significantly larger user group and we face a serious question of social responsibility with Dillon's examination of the alleged contribution of accounting practices to the stock market crash of 1929.

Toward A Theory Of Evolution Of Selected Accounting Ideas (The Florida State University, 1977, 295 pp.; 38/5, p. 2871-A)[1] by Man Chand Maloo. Maloo's hypothesis, born out by examination of six "important ideas" identified by faculty at the Florida State University and the Florida A&M University, is that "there seems to exist an ongoing accounting process which helps to explain the origin, evolution, and final acceptance or rejection of generally accepted accounting principles". According to Maloo, the slowness of this pro-

[1] *Dissertation Abstracts International* volume and page references.

cess is due to numerous causes, including: institutional factors; the pursuit of uniformity goal; and the rapid environmental changes which necessarily bring about a time interval between perceived needs for accounting information and accounting practices which can supply this demand.

With respect to institutional factors, Maloo identified three classes of institutional roles: initiators, proponents, and opponents—all active when a new accounting idea emerges. More accounting changes are initiated by low-authority institutions, such as "management, academicians, practitioners, the AAA and the AICPA." However, the success of a new accounting idea in reaching the status of a generally accepted accounting principle depends on the alignment of high-authority institutions, such as "the SEC, the NYSE, and others", in the role they play as "reactors" with the proponents or opponents from the low-authority institutions. Maloo's central thesis is that in assessing the possible consequences of proposed accounting changes, low-authority institutions consider the safeguarding of their own vested interests while the high-authority institutions attempt to evaluate the costs and benefits to society.

The Development of Income Reporting in the United States (University of Illinois at Urbana-Champaign, 1972, 488 pp.; 33/10, p. 5343-A) by Willard Harold Galliart. Galliart took an international perspective by attempting to assess the influence of developments in Italy, Holland, and Great Britain, prior to 1900, on the evolution of income reporting in the United States. His research relied heavily on review of the professional literature although some examination was made of published financial reports.

Three phases of the income reporting function were analyzed: income measurement, reporting income information, and the attest function. According to the author, improvements in the measurement of income have been hindered and delayed by the lack of a conceptual definition of income on the part of the accounting profession and its reliance on an operational approach, as well as the profession's borrowing of definitions from the fields of economics and law. The reporting of income information is, of course, directly linked with the accountant's perceptions of the firm's basic goal. The centuries-old belief in the supremacy of profit maximization in measuring business success has now been challenged and supplemental reports of enterprise achievement, on some other bases, have been proposed by various critics of the status quo. Galliart notes that, prior to the 19th century, particularly in Britain, income

information was intended primarily for internal management use and thus external reporting was slow in evolving. In recent years, however, significant influences have been brought to bear on the reporting function by various user groups, especially bankers, equity investors, the Securities and Exchange Commission, and the financial press. Galliart considers the attest function to be the least important aspect of the evolution of income reporting. In his opinion, public confidence in audited statements provides some value to the auditing process. However, from an historical perspective, whatever contribution auditing may have made to the evolution of income reporting is more than offset by the accounting profession's traditional preoccupation with the balance sheet.

The Public Accounting Profession—The Impact of External Environmental Factors From 1900-1971 (University of Maryland, 1972, 268 pp.; 33/11, p. 5883-A) by Ralph Wylie Frey, III. Frey evaluated the comparative influences of external political, legal, and economic environmental factors vis-a-vis factors internal to the public accounting profession in developing guidelines for performing the attest function. From the viewpoint of the external environment, the main institutions studied were the New York Stock Exchange, the Securities and Exchange Commission, consumerism, and conglomerates, while the pronouncements of the American Institute of CPAs were surrogates for internal influences. The author identified 42 publications dealing with accounting principles and auditing standards and isolated only 6 of them as resulting from initial exertions of external environmental factors. These were: Statements on Auditing Procedures Nos. 1 and 50, Accounting Research Bulletin No. 41, the Tentative Statement of Auditing Standards—Their Generally Accepted Significance and Scope, and Accounting Principles Board Opinions Nos. 4 and 19. Consequently, while Frey notes that the scope of his study was necessarily limited to a manageable task, those events which impacted on the development of accounting principles and auditing standards and procedures, and which were included in his review, chiefly emanated from within the internal environment.

Historical Critique of the Development of the Federal Income Tax From 1939-1954 And Its Influence Upon Accounting Theory and Practice (University of Illinois, 1968, 636 pp.; 29/3, p. 701-A) by Melvin Theodore McClure. McClure's study traces the development of Federal income tax regulation, during the period 1939-1954, from

a legislative, judicial, and administrative standpoint, and evaluates concurrent influences on accounting theory and practice.

The most significant contributions by the judiciary to the development of income taxation lay in broadening the way in which taxable income was defined, making taxation theory more cohesive, and not permitting income to be artificially allocated between taxpayers. Various standards evolved during this period, the most significant being the concept of the claim of right which, under certain conditions, allowed funds to be taxed wither when received or when the right to receipt became fixed. Also, the closed transaction approach became a guideline for recognizing revenues and expenses for tax purposes and the all events test developed as a standard for recognizing deductions. The first and third of these standards had important effects on the legal concept of realization in that the realization of revenues was accelerated by the claim of right concept whereas the realization of expenses and losses was delayed by the all events test. Both income tax law and regulations interpretation were affected by the recommendations of the AICPA's Committee on Federal Taxation in that a number of its proposals were adopted regarding specific changes in tax philosophy as well as the basic accounting principles which should be reflected in the Tax Code.

The other side of the coin, McClure found, is that accounting theory and practice was itself profoundly influenced by the growing field of income taxation. Such topics as accelerated depreciation, new depreciation guidelines and rules, the investment credit, stock options, pension plans, the net operating loss deduction, accounting for tax effects, and changes in accounting methods and correction of accounting errors created new challenges for accounting theory and practice. The gap between statutory law and accounting philosophy has both widened and narrowed as differences have arisen between accounting and taxable income and McClure optimistically calls for harmony through reconciliation.

A History of the Issues and Problems Surrounding Goodwill in Accounting (The University of Alabama, 1972, 509 pp.; 33/7, p. 3073-A) by Hugh Peter Hughes. This study traces the evolution of the concept and accounting treatment of goodwill. The term "goodwill" has come down from the era of small owner-operated enterprises when the profitability of a firm was attributed to the favorable attitudes of its customers. Although firms have grown in size and the number of factors influencing profitability has multiplied, this term has remained the same. Also unchanged over the centuries has

been the use of the cost principle for the valuation of goodwill as an asset. No such traditional unanimity of opinion existed, however, with respect to the accounting treatment to be accorded goodwill after it had been acquired by purchase. From the late 1920s, the tax law exerted a strong influence on accounting practice by not permitting deductions for goodwill amortization. Despite this 50-year tax tradition, however, the Accounting Principles Board made periodic amortization mandatory in the early 1970s. In our present post-industrial society and "from a contemporary, institutional viewpoint", Hughes states, "goodwill may be defined as a differential advantage accruing to a corporation in terms of its dominant goals—the ability to generate superior profits by whatever means to finance the technostructure's growth, usually by selling goods through purposeful manipulation of the consumer's customs and habits."

General Purchasing Power Financial Statements—A Behavioral Study (University of Arkansas, 1977, 144 pp.; 38/5, p. 2871-A) by Kenneth Ray Lambert. Lambert's research was concerned with the problem of whether the professional decisions of commercial bank loan officers would be affected by general purchasing power information and his conclusions supported a null hypothesis.

His study commenced with an historical survey of the topic of adjusting financial statements for changes in the general price level. In the United States, Sweeny's *Stabilized Accounting* was the most important early contribution to this literature. Research on this topic was sponsored by the AICPA and the AAA, price level adjustmented financial statements being recommended by the AAA in 1951. It was not until almost two decades later, in 1969, that the AICPA moved in the same direction when the Accounting Principles Board issued Statement No. 3. Since that time, much has been studied, written, and debated but little resolved. According to Lambert, the main cause of the dilemma is the fact that there are two coexisting enterprise concepts: the entity theory and the proprietorship theory and this prevents mutual agreement about how to account for the impacts of inflation.

The second part of the study was an empirical test of the reactions of bank loan officers when financial information about general purchasing power was supplied in addition to the conventional historical cost accounting data. A sample of loan officers, drawn from the three hundred largest banks in the United States, was divided into 2 groups. Each group was given the same set of financial statements for a hypothetical Alpha Company, based on historical cost,

plus financial statements for a second firm, Beta Company, and asked to evaluate a request from each company for a term loan. The Beta Company financial statements given to the first group of loan officers consisted of general purchasing power information although it was not so identified. The Beta Company financial statements provided to the second group of subjects had historical cost information and general purchasing power information presented in parallel columns. For this (group 2's) Beta Company, the historical cost data was a scale model of Alpha Company's and the general purchasing power data was the same as that supplied to group 1.

Lambert's analysis of the loan officers' responses showed that the first group, which was unaware of the nature of the Beta Company data, evaluated the Alpha and Beta Companies differently, probably because of the numerical differences between the two sets of data, whereas the second group evaluated the two companies about the same. Consequently, Lambert accepted the null hypothesis that there is no significant difference between the loan decisions of professional commercial bank officers which are based on conventional financial statements and those which are on financial statements which contain both historical cost and general purchasing power data.

The Role of Accounting in the Stock Market Crash of 1929 (The University of Michigan, 1977, 367 pp.; 38/6, p. 3573-A) by Gadis James Dillon. Did, as widely believed, accounting practices contribute significantly to the stock market crash of 1929? Dillon does not think so. He reviewed accounting literature of the 1920's, focusing on the following topics: statement preparation, content, and disclosure; income determination and uses; asset recognition, revaluation, and depreciation; and intercorporate investment and business combinations. He then selected a sample of 160 firms listed on the New York Stock Exchange and examined their accounting practices regarding the above topics, using as primary source data annual reports, *Moody's Industrial Manual,* and historical information from the SEC. Dillon's conclusions from this analysis were that "no aspect of accounting, individually or jointly, seemed sufficiently inadequate to be culpable in the crash."

The author feels that, from today's standpoint, disclosure was the greatest inadequacy of the 1920s. Many firms in the sample did not disclose amounts for sales or cost of goods sold and none issued comprehensive details of accounting policies. A surprising

outcome to him was the discovery, based on data from the SEC, that revaluations were less extensive than expected and that decrease in asset valuations exceeded increases. Upward revaluations were reported by 25% of the sample firms during the period 1925-1929 but not by more than 10% of the sample in any one year. Nor was the size of the upward revaluation great in that less than 10% of the sample increased their asset valuations by as much as 5% of total assets at any time during this same 5-year period. Furthermore, none of the firms in the sample credited income for increases in asset valuation. Dillon concluded his study by making statistical tests for relationships between these specific accounting practices and changes in stock prices. Nineteen accounting attributes were isolated from the specific accounting practices. For measures of stock market performance, cumulative unpredicted residuals were obtained by using stock rates rates of return data from the period immediately after the crash to extrapolate the market model for each firm in the sample. Stock rates of return data for the period prior to the crash were used, through regression techniques, to estimate market model parameters. The test used to investigate relationships between the 19 accounting attributes and the cumulative unpredicted residuals was the Mann-Whitney U test. Only one association was found to be significant at the .05 level: that between relative size of investments and cumulative residual, which, Dillon points out, "was not surprising given the impact of the crash on stock prices".

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29. Historic Origins of the Purchase vs. Pooling of Interests Problem, by Wesley T. Andrews.
30. Current Efforts to Develop a Conceptual Framework for Financial Accounting and Reporting, by William G. Shenkir.
31. Influence of Nineteenth and Early Twentieth Century Railroad Accounting on Development of Modern Accounting Theory, by James L. Boockholdt, University of Houston.
32. The Historical Development of Standard Costing Systems Until 1920, by Nathan Kranowski, Radford College.
33. The CPA's Professional Heritage, Part IV, "The Birth of the SEC", by John L. Carey.
34. The Evolution of Accounting Theory in Europe from 1900 to the Present Day and its implications on industrial management of tomorrow, by Paul Weilenmann.

Announcement

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THE ACCOUNTING REVIEW

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