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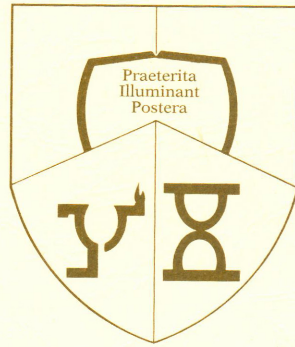
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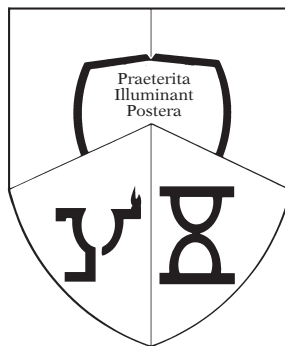


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Research on the Evolution of Accounting
Thought and Accounting Practice

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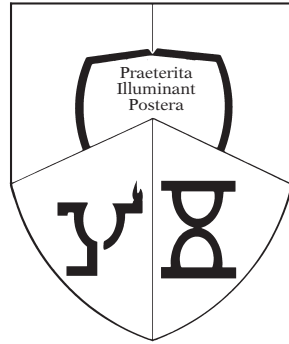
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THE SEC PREEMPTS THE ACCOUNTING PRINCIPLES BOARD IN 1965: THE CLASSIFICATION OF THE DEFERRED TAX CREDIT RELATING TO INSTALLMENT SALES

Abstract: In 1959, the Accounting Principles Board (APB) replaced the Committee on Accounting Procedure because the latter was unable to deal forthrightly with a series of important issues. But during the APB's first half-dozen years, its record of achievement was no more impressive than its predecessor's. The chairman of the Securities and Exchange Commission (SEC), Manuel F. Cohen, criticized the APB's slow pace and unwillingness to tackle difficult issues. This article discusses the circumstances attending the SEC's issuance of an *Accounting Series Release* in late 1965 to demonstrate forcefully to the APB that, when it is unable to carry out its responsibility to "narrow the areas of difference" in accounting practice, the SEC is prepared to step in and do so itself. In this sense, the article deals with the tensions between the private and public sectors in the establishment of accounting principles in the U.S. during the mid-1960s. The article makes extensive use of primary resource materials in the author's personal archive, which have not been used previously in published work.

INTRODUCTION

In 1959, the American Institute of Certified Public Accountants (Institute, AICPA) appointed a new body, the Accounting Principles Board (APB), to succeed the Committee on Accounting Procedure (CAP). The APB had been charged to do a better job than its predecessor in raising the standard of accounting practice [see Zeff, 2001]. But the APB got off to a slow and uncertain start. In an embarrassing decision made in early 1962, it rejected the recommendations of a research study it had commissioned on broad accounting principles and shelved the

Acknowledgments: The author is grateful to Hugo Nurnberg, Sundaresh Ramnath, and an anonymous reviewer for comments on an earlier draft, as well as to Bill Coxsey and Travis Holt for services provided.

study [see Moonitz, 1974, pp. 17-20]. In early 1963, the APB was rebuffed by the Securities and Exchange Commission (SEC) on the investment tax credit [see Moonitz, 1966]. Finally, in 1964-1966, the APB seemed poised to right its course. Foremost among the reasons for this turn of events were (1) the decision by the Institute's executive committee to abandon its policy of appointing only the strong-willed managing partners of the Big Eight accounting firms to the board, and (2) the decision by the new board chairman, Clifford V. Heimbucher, a past president of the Institute and a partner in a small San Francisco CPA firm, to organize the board's work more effectively [Carey, 1970, pp. 130-132]. These were administrative improvements of considerable importance.

But there was a third reason – the increasing public pressure from the activist chairman of the SEC, Manuel F. Cohen. In a series of speeches, he urged the APB to make the difficult decisions so as to “narrow the areas of difference and inconsistency in practice,” which the CAP had set as one of its objectives in 1953, and which had been laid down as an objective for the APB by the Institute's Special Committee on Research Program in 1958 [“Report to Council of the Special Committee...,” 1958, pp. 62-63].

In 1965, the APB was drafting an *Opinion* on the status of the CAP's *Accounting Research Bulletins*. In its exposure draft, it proposed to classify the deferred tax credit as a current liability when it relates to installment sales receivables shown as a current asset. Then the board recanted its position, greatly annoying one of its supporters, Arthur Andersen & Co. (AA). In late 1965, AA petitioned the SEC to require its classification as a current liability, thus overruling the APB. Manuel Cohen seized upon the petition as an opportunity to lecture a delegation from the APB at a specially called meeting of the Commission and then to issue an *Accounting Series Release* on the deferred tax classification as requested by AA. It was unprecedented for the SEC to issue a rule on accounting recognition, measurement, or classification in an area in which the accounting profession had declined to act after having initially undertaken to do so.¹ This action by the SEC has been little noticed in the literature

¹To be sure, the SEC's accounting staff had exerted its influence on the CAP and the APB in other ways. The only comparable confrontation between the standard setter and the SEC on income tax allocation occurred in 1945, when the SEC issued *Accounting Series Release No. 53* [SEC, 1945] in order to limit the applicability of *ARB No. 23* [CAP, 1944].

[cf. see Pines, 1965, pp. 739-740; Defliese, 1974, p. 39], and there is some evidence to suggest that the SEC's release was a factor contributing to the APB's greater inclination to address difficult questions head-on in 1966-1967, especially on pensions and income tax allocation. In its later years, however, the APB foundered once again, in particular on accounting for business combinations [see Chatov, 1975, chap. 14; Seligman, 2003, pp. 418-430]. In 1973, the APB was succeeded by the independent Financial Accounting Standards Board. It is the purpose of this paper to examine in some depth this unique intervention by the SEC in the process by which the profession established accounting principles in the mid-1960s.

BACKGROUND

When the APB was established in 1959, the Institute's executive committee, probably at the behest of President Louis H. Penney, decided that only managing partners would be invited to represent the Big Eight firms on the board.² The executive committee apparently believed that the board would be making broad policy decisions based on technical support from its research staff, and that the managing partners were the most suited to making such executive decisions. But it quickly became evident that the board could not avoid immersing itself in highly technical issues. It also became clear that a number of the managing partners were not technical specialists, did not always read their agenda materials prior to the meetings, were typically men of strong conviction, and, thus, did not work easily together during the board's early years. Also, the board exhausted itself in lengthy debates leading up to *Opinion Nos. 2* and *4* [APB, 1962, 1964] on the investment tax credit, on which a total of 11 members dissented and a further nine filed qualified assents. Further, the board expended considerable time and energy on the controversial research study on accounting principles [Sprouse and Moonitz, 1962] and on a recommendation to Council on the authority that the board should be given to make changes in "generally accepted accounting principles" (GAAP) [Zeff, 1972, pp. 180-182].

By 1964, it became clear to the Institute's executive committee that its policy on managing partners had been a mistake,

²The lone exception was Weldon Powell, the senior technical partner of Haskins & Sells. Powell had chaired the special committee that called for establishment of the APB and the new accounting research division to provide the board with technical support.

and it proceeded to appoint the Big Eight firms' senior technical partners as the terms of their firms' managing partners expired [see Zeff, 1972, p. 193]. (It was always the Institute's unstated policy to have one representative on the board from each Big Eight firm.) By 1966, all but one of the managing partners of the Big Eight firms had departed the board. The lone exception was John W. Queenan, who had succeeded Weldon Powell as the representative of Haskins & Sells in 1963. But Queenan had served on the CAP from 1949 to 1954 and was strongly interested in technical accounting issues.

When Heimbucher became chairman of the board in 1964, he established subject-area subcommittees to study and draft *Opinions*. Previously, the board itself had done the drafting *in plenum*. Also, he arranged for an administrative staff to circularize exposure drafts and to read and analyze the letters of comment, thus freeing up time for the accounting research staff to concentrate on research. In addition, he set up a planning committee to set priorities and target dates for the board's agenda of projects. Finally, he allowed board members to bring an adviser to board meetings [see Heimbucher, 1966].

All the while, the board was being criticized in the financial press, in speeches by Leonard Spacek, the outspoken and feisty managing partner of AA, and by SEC Chairman Cohen. The issue coming in for the greatest attention was over "uniformity" v. "flexibility" when companies made choices of accounting principles, including the consequent diversity of accounting practice. Spacek spoke in favor of greater uniformity, while several other large firms, such as Price Waterhouse & Co. and Haskins & Sells, defended flexibility in the choice of accounting principles.³ The SEC was on record for many years as favoring greater uniformity, and, in a speech in late 1964, Cohen [1964, p. 12] became more insistent that decisive progress be made in that direction. He said that "an immediate and pressing objective is to eliminate the use of alternative accounting principles underlying financial statements not justified by differing circumstances." During its first 5½ years, by the end of 1964, the APB had issued only five *Opinions*, and none had had the effect of narrowing accepted practice.⁴

³See the symposium, "Uniformity in Financial Accounting" [1965], for papers by Spacek, Weldon Powell, J. Arnold Pines (of the SEC staff), and others. For the Price Waterhouse view, see Bevis [1965] and Grady [1965, pp. 32-34].

⁴It was not for lack of trying, however. In *Opinion No. 2* [APB, 1962], a divided board tried mightily to limit to one the number of ways to account for the investment tax credit. But the SEC was lobbied into allowing an alternative

WHY THE CLASSIFICATION OF THE DEFERRED TAX
CREDIT BECAME IMPORTANT TO SPACEK
AND ANDERSEN IN 1965

It was in this roiling environment that Leonard Spacek and AA became concerned about the diversity of practice allowed for treating the deferred tax credit arising from retailers' use of the installment method for recognizing gross income for income tax purposes coincident with recording sales revenue for financial reporting purposes as soon as an installment sale was made. Retailers, especially the department stores and mail-order houses, were the industry most significantly marked by this diversity of practice. The majority of companies had been classifying the deferred tax credit as a noncurrent liability. A few were displaying it as a current liability. Some companies had deducted the deferred tax credit from the installment receivables [see Hicks, 1966, p. 130].

Norman O. Olson [1966, p. 60], a partner in AA's executive office, explained why the deferred tax credit was becoming of increasing importance to companies in the retail industry. Referring to the divergence in practice between its classification as current or noncurrent, he wrote:

The effect of this divergence in practice was assuming greatly increased significance by 1965, and it was likely to increase even further. With the expanded use of revolving credit plans and various other installment payment plans by merchandising companies and with the relatively recent regulations of the Internal Revenue Service permitting sales under revolving credit plans to be treated as installment sales for income tax purposes, many companies were accumulating an increasingly large amount of deferred income taxes on installment sales.

Olson added that the classification of deferred tax "has a significant effect on the determination of a company's working capital and the credit rating it receives."

The classification of the deferred tax credit became an important issue to Spacek and AA in early 1965, when the president of one of its major retail clients, Montgomery Ward & Co., Incorporated (MW) complained about having to show its credit

method, and, in *Opinion No. 4* [APB, 1964], the board reluctantly conceded defeat. This rebuff of the board by the SEC provoked considerable comment in the press.

as a current liability in its 1964-1965 financial statements (fiscal year ending on February 3, 1965). In line with a position which it had recently announced, AA [1962, pp. 66-67] insisted that MW classify its deferred tax credit as a current liability. The current portion of the deferred tax credit balance in its balance sheet dated February 3, 1965 was \$3.9m, which represented 1.8% of its total current liabilities excluding the credit, but the president surely knew in early 1965 that this percentage would increase steeply in the years ahead. (It did indeed rise to 6.5% by February 2, 1966 and to 9.7% a year later.) Sears, Roebuck and Co., a much larger retail company, also based in Chicago, and audited by Touche, Ross, Bailey & Smart, had been displaying its deferred tax credit as noncurrent. The balance of Sears' deferred tax credit on January 31, 1965, the end of its fiscal year, was \$454m, equal to *one-third* of its total current liabilities on that date.⁵ MW's president wanted to know why his company should be penalized for carrying the credit as a current liability while most other major retailers were not. Spacek agreed that his company should not be penalized, and he offered him a deal. If MW would agree to show the credit as a current liability in its 1964-1965 financial statements, and if Spacek could not get the APB to call for a uniform classification of the credit as a current liability by the end of 1965, he would approve of MW's adoption of noncurrent treatment in its 1965-1966 financial statements. MW's president agreed to the deal.⁶

SPACEK'S EFFORT TO PERSUADE THE APB TO ACT ON DEFERRED TAXES

Previously, the CAP had dealt with the tax effect of a timing difference between reporting accelerated depreciation for income tax purposes and recording straight-line depreciation expense for financial reporting purposes (*Accounting Research*

⁵Neither MW nor Sears disclosed the current portion of its deferred tax credit, that is, the portion relating to installment receivables shown as current assets, in their 1965 year-end annual reports. Yet both companies had to break down their deferred tax credit account into its current and noncurrent components in their February 2, 1966/January 31, 1966 balance sheets, owing to the dictum in *Accounting Series Release No. 102* [SEC, 1965] (see below). They were also obliged to give, which they did, the comparative current/noncurrent breakdown for the previous year's balance sheet. As will be seen, the SEC release dealt with the classification of the deferred tax credit only in relation to installment receivables shown as current assets.

⁶This anecdote is recounted in interviews with George R. Catlett, September 3, 1970 and May 3, 1978.

Bulletin [ARB] No. 44 Revised) [CAP, 1958]. It had recommended that, except in special circumstances, such differences should be accounted for as deferred taxes. The CAP announced in 1959 that the deferred tax credit account relating to the depreciation differential should be shown in the balance sheet as a liability or deferred credit, not as part of equity capital [CAP, 1959]. As far back as 1944, the CAP had recommended that a provision should be made for the estimated tax to be paid on installment sales which were deferred for income tax purposes (*ARB No. 23*, final paragraph) [CAP, 1944]. The CAP reaffirmed this position in paragraph 18 of Chapter 10B of *ARB No. 43* [CAP, 1953]. But the CAP did not say how to classify the deferred tax credit account. In the retail field, as indicated, there was a lack of agreement whether the deferred tax credit should be shown as a current or noncurrent liability when the installment sales receivable was shown as a current asset.

During 1964-1965, the APB was deliberating a pronouncement, which became *Opinion No. 6* issued in October 1965, in which it was to announce which of the CAP's *Accounting Research Bulletins* should be continued without amendment and which should either be revised or be withdrawn entirely.⁷ All of the board members, as well as Andrew Barr, the SEC chief accountant, were invited by Chairman Heimbucher to give their views on which of the *ARBs* should be retained, in their original form or as amended. In a letter dated May 26, 1965, Leonard Spacek, who was in his last year of service on the board, replied that the definition of current liabilities in *ARB No. 43*, Chapter 3A, paragraph 7 [CAP, 1953] should be amended to include deferred taxes to the extent that they relate to current assets, such as the current portion of installment sales receivable. It was expected that much of the impact of this amendment would be on retailers.⁸ On June 4, 1965, Andrew Barr replied at length to

⁷The board's review of the *ARBs* became necessary after the AICPA Council decided in October 1964 that any departures in company financial statements from accounting principles accepted in the board's *Opinions* and in the *ARBs* had to be disclosed either in the footnotes or in the auditor's report, effective with financial statements for fiscal periods beginning after December 31, 1965. The board, therefore, had to determine which of the contents of the *ARBs*, with or without amendment, were to serve as this benchmark.

⁸The references to board correspondence and board minutes are drawn from files that AA generously allowed the author to copy during the summers of 1982 and 1983 in the firm's Chicago executive office, at the invitation of Arthur R. Wyatt. Documents have been obtained from other sources as well. Researchers interested in pursuing the issue raised in this article are invited to inspect copies of the related documents in the author's personal archive.

Heimbucher's invitation, and, among other things, stated that "Paragraph 7 [of *ARB No. 43*, Chapter 3A] should be expanded to specifically state that liabilities maturing in the time period of the operating cycle should be included in current liabilities, such as liabilities related to installment receivables and deferred income taxes on installment sales."

Spacek sought the view of Anson Herrick, a retired San Francisco practitioner who, as a member of the CAP in the 1940s, had drafted *ARB No. 30*, "Current Assets and Current Liabilities – Working Capital" [CAP, 1947], which served as the basis for Chapter 3A of *ARB No. 43*. Herrick replied that he supported the proposed classification of the deferred tax credit as a current liability in such circumstances. He said that "[the classification] is completely consistent with the cycle theory which I originated."⁹

In 1953, no less an authority than Carman G. Blough, the Institute's director of research, who attended the meetings of the CAP, had opined that the deferred tax credit relating to installment receivables should be shown as a current liability in line with *ARB No. 30* [Blough, 1953, p. 347].

SEC Chairman Cohen [1966, p. 59] was later to say that, in 1965, "no fewer than four different reporting methods were used by companies for which the [deferred tax] item was of considerable importance. ... Significantly, each method carried the opinion of an independent public accountant reporting that the financial statements had been prepared in accordance with generally accepted accounting principles." Clearly, a uniform approach was lacking.¹⁰

At its meeting on June 21-23, 1965, the APB unanimously approved Spacek's proposed amendment of paragraph 7, and it was duly included in the board's exposure draft that was issued in July ["Exposure Draft of Tentative Opinion...", 1965].¹¹ The draft was widely circulated, including a special mailing to the presidents of the some 1,300 companies listed on the New York Stock Exchange. The pertinent passage in the exposure draft appeared in paragraph 13. In that paragraph, it was stated that the AICPA's accounting research division will conduct a research study on current assets and liabilities, and that, "[p]ending completion of this study, and publication of a Board Opinion

⁹letter from Herrick to Spacek, dated June 17, 1965

¹⁰This matter was also discussed at length by Rappaport [1972, pp. 3-7 to 3-10].

¹¹AICPA – APB, minutes of meeting, June 21-23, 1965, p. 1

thereon," the following paragraph was to be added to Chapter 3A (p. 58):

10. Whenever it is appropriate to record deferred income taxes, such deferred taxes should be classified as a current liability in the balance sheet to the extent that they are related to current assets which give rise to the tax deferment.

As can be seen, the proposed change was solely one of balance-sheet classification, and it was to be reconsidered once the board could review the research study on current assets and liabilities. The provision did not pretend to impose tax allocation accounting (today known as deferred tax accounting) where it had otherwise not been recommended by the CAP or the APB. Indeed, the APB was then considering whether to pronounce in favor or against tax allocation generally, and two of the Big Eight firms (Price Waterhouse & Co. and Haskins & Sells) had already registered antipathy, or at least profound skepticism, toward any tax allocation at all. AA was the Big Eight firm that was the strongest advocate of tax allocation.

During the board's June meeting, George R. Catlett succeeded Spacek as AA's representative on the board. He later recalled that board member Ira Schur of S.D. Leidesdorf & Co., a middle-sized firm based in New York City, said that his firm had been trying to persuade City Stores, one of its clients, to reclassify its deferred tax liability relating to installment receivables as current but had been unable to do so because of the noncurrent classification used by most other companies in the industry. He also recalled that board member Donald J. Bevis of Touche, Ross, Bailey & Smart said that he had always favored the current classification for the deferred tax credit relating to installment sales.¹² Touche, Ross, the auditor of Sears, was then the predominant Big Eight firm with major clients in retail trade – department stores, mail-order houses, etc. [see Zeff and Fossum, 1967, p. 317].

Key commentators on the exposure draft expressed reservations or outright opposition to paragraph 13 on the current classification. The Panel on Accounting Principles of the Financial Executives Institute argued that the paragraph prejudged the research study on current assets and liabilities still under way

¹²internal AA memorandum from George R. Catlett to partners R.I. Jones, W.J. Mueller, J.J. Brice, and J.W. Boyle, dated July 1, 1965

by the board's research staff.¹³ Awaiting the results of research has always been an easy argument to make against unwelcome changes in accounting principles. The Retail Committee on Accounting Principles of the National Retail Merchants Association (NRMA), representing 15 major department stores and mail-order houses (including MW, Sears, and City Stores), objected to the reclassification. It argued that only income taxes payable during the current year should be shown as current: "The deferred income taxes of retailers arising out of the installment method of tax accounting are, in effect, a long-term obligation which is not payable until the outstanding receivables are liquidated – a very remote possibility in a going business."¹⁴

Of the 15 companies represented on the NRMA's accounting principles committee (apart from MW and Sears), five had balances in their deferred tax credit account relating to installment receivables that were equal to or exceeded 15% of their total current liabilities, excluding the credit, at the end of their 1964-1965 fiscal years: J.C. Penney Company, Inc. (16.8%), Broadway-Hale Stores, Inc. (18.8%), May Department Stores Company (20.3%), Miller & Rhoads, Inc. (48.9%), and Rich's Inc. (50.6%) . Five of the other companies disclosed that they had balances of less than 15%, while no information is available for the remaining three companies.¹⁵

One reason why retail companies objected to the current classification of the deferred tax credit was that it did not represent a current claim on liquid assets and, thus, would give a misleading impression of a retailer's ability to meet its financial obligations. It would also place such companies in an awkward position because of the working capital requirements stipulated in their bond indentures.¹⁶

In correspondence among board members following issuance of the exposure draft, the two Big Eight firms that were known to be unsympathetic toward tax allocation, mentioned

¹³letter from J.R. Janssen, chairman of the Panel, to Richard C. Lytle (APB administrative director), dated September 15, 1965

¹⁴letter from K.S. Axelson, chairman of the committee, to Richard C. Lytle, dated September 15, 1965

¹⁵These percentages were developed from ProQuest's Historical Annual Reports service and from *Moody's Industrials* for the year 1966. Because of the unavailability of the other three companies' annual reports and their omission from *Moody's Industrials*, it was impossible to determine how much of the balances in their deferred tax credit account, if any, was attributable to installment receivables.

¹⁶letter from Malise L. Graham, of the New York law firm of Faulkner, Dawkins & Sullivan, to William D. Hall, a partner of AA, dated March 30, 1966

above, made known their disagreement with paragraph 13. In retrospect, it is surprising that they assented to the provision during the June meeting of the board. Board member Herman W. Bevis, the senior partner of Price Waterhouse, recommended that the paragraph be deleted, as it was not clear, he said, whether the deferred tax credit was a liability at all, even though it must be shown on the liability side of the balance sheet. He believed that it was, in essence, only a contingency.¹⁷ Bevis said he had canvassed his partners for their views, and it seems likely that his partners had in turn canvassed the views of their retail clients. Haskins & Sells submitted a memorandum in which it also opposed the provision, as it believed that the amount might never fall due. The firm said that the balance in the deferred tax credit account might constantly grow and, thus, may never mature as an amount to be paid. The firm conceded that it would be more theoretically defensible to classify the deferred tax as a current liability if it were expected to mature within one year from the balance sheet date. The firm also argued that the board's proposed reclassification goes beyond prevailing practice. Furthermore, it said, any such recommendation should await completion of the research studies on current assets and liabilities and on tax allocation accounting.¹⁸ Letters submitted by the board members from Ernst & Ernst (E&E) and Lybrand, Ross Bros. & Montgomery (LRB&M), which were two of the other Big Eight firms, did not mention the proposed reclassification in paragraph 13.¹⁹

At the board's next meeting, on September 16-17, 1965, it reversed its unanimous approval of paragraph 13. The board voted 14-2 to delete the provision on the classification of deferred tax "on the condition that a subcommittee would be appointed to consider the subject."²⁰ It was the only item in the exposure draft that the board deleted in its entirety [Lytle, 1965, p. 72]. George Catlett "objected strenuously to deferring this question" [Olson, 1966, p. 61]. Richard C. Lytle [1965, p. 72], the board's administrative director, gave the following reasons for the board's action:

¹⁷letter from Herman W. Bevis to Reed K. Storey (AICPA director of accounting research), dated August 9, 1965

¹⁸memorandum attached to the letter from Oscar S. Gellein to Richard C. Lytle, dated September 10, 1965

¹⁹letters from Hassel Tippitt (E&E) to Richard C. Lytle, dated July 20, 1965, and from Philip L. Defliese (LRB&M) to members of the APB, dated September 13, 1965

²⁰AICPA – APB, minutes of meeting, September 16-17, 1965, p. 4.

Unlike other changes proposed in the exposure draft, this paragraph was directed to a matter not specifically covered in the ARBs and its inclusion would have been consistent with what appears to be the more predominant accepted practice currently.

He added that it could have “important implications with regard to the broad area of accounting for income taxes,” a subject on which a research study was being completed (which had been in preparation since 1961). One major question, he said, was “whether deferred income taxes are a ‘deferred credit’ or a ‘liability.’” This last point, which had been debated for years, was probably significant in crippling the effort to classify the deferred tax, if only in defined circumstances, as a current liability. In its *Executive Letter* to partners and managers, Price Waterhouse said: “The APB decided to omit the [reclassification] requirement from Opinion No. 6 largely because it was out of context with an opinion having the avowed purpose of revising existing pronouncements in order to ‘obviate conflicts between present accepted practice and provisions of outstanding Bulletins’” [“Special Bulletin...,” 1965, p. 4].

AA’s Catlett was convinced that the reversal was a clear result of client pressure brought on the firms, whose board representatives had not realized in June how large the impact of the reclassification might be on their clients’ balance sheets.²¹ Not surprisingly, the paragraph had met with considerable opposition from retail industry commentators on the exposure draft, including a number of major companies, such as Broadway-Hale Stores, Sears, Spiegel, and MW, which wrote separate letters apart from the letter from the NRMA.²² Many of those opposing the paragraph on classifying deferred tax criticized the precedent of linking an item on the liability side of the balance sheet with one or more classes of assets; instead, they believed that the deferred tax should be classified according to when it will be liquidated. Others questioned whether the deferred tax would ever actually be paid, and, thus, they saw no ground for requiring that it reduce working capital. Some said that the reclassification went beyond the scope of the pronouncement, which was to determine which pre-existing positions in the ARBs were to be regarded as still in force. *Opinion No. 6*, “Status of Accounting Research Bulletins,” was published in October

²¹interview with George R. Catlett, May 3, 1978

²²These separate letters were in the batches of comment letters conveyed to the board by Richard Lytle.

1965 and reproduced in the November issue of the *Journal of Accountancy*.

AA PETITIONS THE SEC

On October 1, 1965, two weeks after the board meeting at which paragraph 13 was deleted, AA petitioned the SEC to issue an *Accounting Series Release (ASR)* that would classify the deferred tax arising from current assets such as installment sales receivable as a current liability. AA knew, of course, that SEC Chief Accountant Andrew Barr had advised the APB that he favored such a classification. And, as mentioned above, SEC Chairman Cohen had been railing against the diversity in accounting practice. The firm had reason to believe that the SEC might be sympathetic to its cause. Yet it privately harbored doubts that the SEC would act favorably on its petition.²³

As was the SEC's practice in such matters, AA's petition was held in confidence, except that Barr notified Richard Lytle, at the board, that AA had filed the petition. Barr inquired if the board might be able to act on the deferred classification by November 15, which was viewed as the deadline for the SEC to publish a proposed accounting rule that, after a 30-day exposure period, could be adopted in time to apply to financial statements ending on or before December 31. At Lytle's request, and with the acquiescence of Barr, AA provided the APB with a copy of the petition for confidential circulation to the board members. The board's planning subcommittee met on October 22. It concluded that the subject was too complex for the board to be able to act on the matter by the end of 1965.

Contrary to what some might have expected, namely, that AA would publicize its petition to vaunt the role it was playing to achieve greater uniformity in financial reporting, the firm rarely mentioned its authorship of the petition in its publications, and only well after the event.²⁴ Chief Accountant Barr had advised AA that the Commission would prefer that the firm not publicize the petition until it was acted upon, and the firm complied.²⁵

²³interview with George R. Catlett, September 3, 1970

²⁴The only two mentions the author has found are in Olson [1966, p. 61] and AA [1969, p. 67]. Spacek did not mention the petition in his speeches. The author can find no other mentions in the literature of AA being the source of the petition. Cohen [1966, p. 59] said that "a leading accounting firm" had petitioned the SEC but did not name the firm.

²⁵ interviews with George R. Catlett, September 3, 1970 and May 3, 1978

THE SEC CONFERS WITH A DELEGATION FROM THE APB

In November 1965, the SEC invited the APB to send a delegation to meet with the five members of the Commission to discuss the AA petition. The four members of the APB's planning committee, composed of Chairman Clifford Heimbucher, Herman Bevis (Price Waterhouse and APB vice chairman), John Queenan (Haskins & Sells), and Frank T. Weston (Arthur Young & Company), accompanied by two senior staff members, attended the conference. All four of the APB members in attendance were practitioners who were held in high regard for their serious dedication to the development of accounting principles. The hour-long meeting was held in the SEC's offices in Washington on November 22. SEC Chairman Cohen presided, and Chief Accountant Barr attended.²⁶ It was one of the rare occasions on which the Commission met formally with members of the APB, and it was rarer still for such a meeting to be recorded on a stenographic transcript.²⁷ In his prepared remarks, Cohen made it known that the Commission's staff had "as early as August, 1950 recommended to a committee of the American Institute of Accountants to take a firm position" (p. 3) in the matter of the classification of deferred tax in such cases. He added: "The increasing incidence of these practices and the growing significance of the amounts involved convince us that the petition is right in urging us to act now rather than to tolerate further delay which your procedures would seem to require" (p. 3).

Cohen quoted from the AA petition as follows:

Some companies which have heretofore included the deferred taxes in current liabilities have changed the classification to noncurrent liabilities. Other companies (some of which are our clients) are now taking the position that they will change the classification to noncurrent at the end of the current fiscal year if other companies are permitted to continue the noncurrent classification. This represents a retrogression in ac-

²⁶"In the Matter of Conference with Representatives of the Accounting Principles Board re: Arthur Andersen & Co. Petition," Official Transcript of Proceedings before the Securities and Exchange Commission, Washington, D.C., November 22, 1965 (ACE-Federal Reporters, Inc, Official Reporters). Quotations from this transcript will be indicated by page number.

²⁷On December 21, 1962, following issuance of the board's controversial *Opinion No. 2* [APB, 1962] on the investment tax credit, a delegation from the board met in Washington with four SEC Commissioners and several SEC staff members, but, as far as is known, no transcript was prepared.

counting which occurs when such alternative practices exist.

Cohen stated that the SEC's staff had already drafted a proposed release that would effectuate the AA petition, but that, before issuing the release, the Commission wanted to have the benefit of hearing the comments of the APB's delegation. And then he bluntly expressed his unhappiness with the board's performance and issued a thinly veiled threat (pp. 4-5):

...before we hear your comments I do want to take this opportunity to observe that this Commission, as you know, has been quite patient with the efforts of the accounting profession to solve a number of accounting matters as to which questionable alternative solutions have been accepted for some time. I am sure you are aware that, we and important persons in other parts of Washington, hear and receive many complaints that the profession seems unable to come to grips with the problems and to adopt solutions, even though extensive studies have been made and published.

As you know, we have certain statutory responsibilities. It has been suggested strongly that if you cannot or will not move with reasonable dispatch to cope with these issues, we should. Now, while our patience has not been exhausted and we believe that cooperation with the Board has been most helpful and should continue, I wish to make the point that we do have a responsibility and that we do have to account for it.

In reply, Heimbucher stated that the board's decision to drop the paragraph on deferred tax from *Opinion No. 6* [APB, 1965] was that it had become controversial and that the pronouncement had to be issued with dispatch. He added that "some of those who voted to remove it from the bulletin at that time did so on the condition that a committee of the Board be appointed immediately to deal forthwith with this question" (p. 8). He said that he expected a three-man committee to report in time for the board's next meeting, in December, "and it is our earnest belief that we will be able to reach a conclusion on this during 1966, allowing for all of our exposure requirements, which take two or three months, and then a final ballot on the draft" (p. 9). Heimbucher hoped to persuade the SEC not to issue its release. Cohen then reminded the board members that the issue concerning the Commission is a larger one, namely, that "the profession finds great difficulty in arriving at solutions

to problems which, albeit difficult, nevertheless appear to be subject to solution" (p. 10).

Herman Bevis pointed out that "these questions are far more difficult and far more complex than those you can state in rather simple form, and I myself believe, and I think you would agree, that what we are looking for is not just any solution which can't stand up in trial very long. We are looking for sound solutions" (p. 11). Cohen replied that he shared Bevis' view, but "as I pointed out this problem was addressed with a certain amount of conviction by our Chief Accountant 15 years ago, and I would think anyone would agree that is a reasonable period within which to find a solution" (p. 11).

John Queenan emphasized that the APB's program of research studies was now coming to the stage where the board will become more active in issuing *Opinions*. On the matter of income tax allocation, he said that he was one of those who did not consider it as a liability. To have approved the deferred tax as a current liability in some cases would, he said, have prejudged the outcome of the research study on tax allocation accounting that was still in preparation. Queenan also doubted that it was as urgent a matter as AA had argued, as he believed that the predominant practice was to show the deferred tax "outside of current [liabilities]" and that there are relatively few companies showing it as current. Hence, he implied, there would be few occasions for switchovers.

Chairman Cohen said he had no reason to question that the board could resolve the issue in 1966, but "I don't know how your resolution will come out..." (p. 18). It was clear to everyone that the Commission had made up its mind on the matter.

Herman Bevis, who was no more sympathetic with the current liability classification than was Queenan, proceeded to argue a point that could be described as *reductio ad absurdum*. He cited Spiegel Co., which showed \$120m of long-term debt and only \$30m of noncurrent assets. He then proposed that, if the deferred tax associated with installment receivables (a current asset) should be shown as a current liability, "it immediately raises the question of whether 90 of the 120 million of the long-term debt shouldn't also go up there, because it has to apply to something on the current asset side"²⁸ (p. 19). Chairman Cohen dismissed the argument peremptorily, as if everything

²⁸This same point was made by a number of commentators on the exposure draft.

on the right side of the balance sheet should be linked to everything on the left side. This strained argument by Bevis could not have given Cohen confidence in the board's ability to solve the deferred tax problem. Then Bevis argued that most of the companies that show the deferred tax as a noncurrent item are the ones where the amount is the most significant, while those that show it as a current liability claim only small amounts, as if to suggest that the issue is not all that important. Amused at Bevis' analysis, Chairman Cohen interjected, "May I partially in jest – I hope it will be so understood – say that I draw from what has been said that where the amount is not material and really can't affect the current ratio very much they assign it to the current section, but where it is material and could affect the current ratio it is assigned elsewhere. Is that too unfair a suggestion?" (pp. 21-22). Bevis was not able to disagree with this reconstruction of his argument as an opportunity for manipulation.

Cohen then ventured the view that the Commission's draft release, being an interpretation of existing requirements, could be issued forthwith, without any prior exposure. He said he was interested in issuing the release in time to affect financial statements for the year ending December 31, 1965. Cohen also expressed exasperation with the board's process: "there ought to be an end to all the studies and all the committees that review the work of prior committees, and someone ought to decide something" (p. 25).

In the course of the discussion, Heimbucher and Weston said they would classify deferred tax as a liability, while Queenan and Bevis had taken the other side. These matched pairs could not have filled Chairman Cohen with confidence that the board would successfully resolve the issue, even in 1966.

At the end of the meeting, Heimbucher and Weston urged the Commission not to act in a way that would reflect unfavorably on the standing of the board, and Cohen expressed sympathy with their view. In fact, in a speech delivered eight days later, he was reassuring on this point. Cohen [1965, p. 11] said:

We are now considering some limited action of our own [on accounting] – action which is not designed to undermine the efforts of the leaders of the profession but rather to emphasize to the entire profession the urgency of immediate and effective support of those who are seeking sound procedures to obviate unjustified differences in the treatment and presentation of similar problems.

THE SEC ISSUES ACCOUNTING SERIES
RELEASE NO. 102

On December 7, 1965, the day before the next APB meeting, the SEC issued *Accounting Series Release No. 102*, "Balance Sheet Classification of Deferred Income Taxes Arising from Installment Sales."²⁹ In the release, the Commission said: "Where installment receivables are classified as current assets in accordance with the operating cycle practice [citing *ARB No. 43*, Chapter 3A], the related liabilities or credit items maturing or expiring in the time period of the operating cycle, including the deferred income taxes on installment sales, should be classified as current liabilities." The SEC made no mention in the release of AA's petition or of the fact that the matter had been under study by the APB.

Although AA had asked in its petition that the rule take effect for fiscal years beginning after December 31, 1965, the SEC opted for a much faster implementation. The rule would apply to fiscal years *ending on or after* December 31, 1965. Catlett had informed Chief Accountant Barr of his firm's "deal" with MW, and he told Barr that if the SEC's rule were not to take effect until 1966 fiscal-year reports, MW and others in the small minority of retailers who were classifying the deferred tax liability as current would all switch to noncurrent in their 1965 reports. Catlett believed that this argument may have been a factor in the SEC's decision to accelerate the effective date.³⁰

THE AFTERMATH OF ACCOUNTING SERIES
RELEASE NO. 102

At the outset of the meeting of the APB on December 8-10, 1965, Chairman Heimbucher handed out confidential copies of the transcript of the meeting with the SEC and said that, at the time of the meeting with the SEC, the members of the APB's delegation were "certain" that the Commission would proceed to issue its draft release.³¹ Heimbucher then quoted from SEC Chairman Cohen's remarks during the meeting that the board is taking much too long to solve the problems before it. Heimbucher was trying to impress on the members that, if the board

²⁹Publication of the release was reported in "SEC Acts to Make Concerns More Uniform in Handling of Assets-Liabilities Accounts," *Wall Street Journal*, December 8, 1965, and in "SEC Prods Accountants," *Business Week*, January 15, 1966, p. 102.

³⁰interview with George R. Catlett, dated May 3, 1978

³¹AICPA – APB, minutes of meeting, December 8-10, 1965, p. 2

did not begin to act more expeditiously, others, such as the SEC, would fill the void. Following the board's three-day meeting, George Catlett reported to his partners that he detected more of a sense of urgency about achieving constructive and effective progress than had ever existed since the board's inception. Not surprisingly, he said he noticed a degree of resentment toward AA on the part of some members, yet the salient point was that the impact on board members of the encounter with the SEC was palpable.³²

Two members of the APB's research staff recalled that an effect of *Accounting Series Release No. 102* was that the board became more careful to include in exposure drafts only those views for which there was strong support.³³

At a later point in the board's meeting, some members thought it would be desirable for the board to state publicly that it was not in conflict with the SEC over *Accounting Series Release No. 102*. The board therefore voted to authorize the administrative director to publish a statement in the *Journal of Accountancy* ["SEC Issues Opinion...," 1966] that it was "in substantial agreement with the position of the SEC." Yet the informal vote to do so was 11-5, a bare two-thirds majority.³⁴ The statement appeared in the January 1966 issue. While there apparently were only a few board members who disagreed in principle with the position espoused in the SEC's release, other board members had procedural concerns, including the belief that the board should not express a view on the classification question until the research study on current assets and liabilities, and perhaps also that on income tax allocation, were completed.

In April 1966, Kenneth S. Axelson, the financial vice president of J.C. Penney Company and chairman of NRMA's accounting principles committee, attacked *Accounting Series Release No. 102* in a letter to the *Journal of Accountancy*. He said that the NRMA had petitioned the SEC to delay the effective date of the release by three months, but that its petition was denied [Axelson, 1966, p. 27].³⁵

³²memorandum by George R. Catlett to his partners in AA, dated December 15, 1965

³³interview with Reed K. Storey and Paul Rosenfield, August 1970

³⁴AICPA – APB, minutes of meeting, December 8-10, 1965, p. 9

³⁵Perhaps because of a belief that the retail industry should be better represented on the APB, the Institute's executive committee appointed Axelson to the board in 1968.

In May 1966, Leonard Spacek [1966, p. 381] said in a speech that “the SEC came to the rescue of professional accountants . . . while the accounting profession remained in an immobile state of indecision.” On the other hand, Herman Bevis [1966] criticized the SEC’s release as supporting uniformity of method over genuine comparability in financial reporting.³⁶

By coincidence, in early December 1965, AA published a 42-page booklet, *Establishing Accounting Principles – A Crisis in Decision Making*, in which it criticized the APB for its ineffectiveness in narrowing the areas of difference in accounting practice. Copies of the booklet were distributed at the APB’s meeting on December 8. AA [1965, p. 28] argued in the booklet that the APB should take steps “to deal with current problems on a timely basis and carry out its responsibilities in a truly professional manner.” AA called for the establishment of a U.S. Court of Accounting Appeals in order to promote the uniformity of accounting practices prescribed by U.S. federal regulatory agencies, including the SEC [see “Accounting Court . . .,” 1966]. At the board’s meeting, Chairman Heimbucher took the time to quote from SEC Chairman Cohen’s strong remarks during the hearing as well as from AA’s charge to the APB to improve its effectiveness. The minutes of the board meeting reported that “Mr. Heimbucher stated that he quoted from these documents to emphasize the necessity for action on the part of the Board in dealing with accounting principles and to stress that, if the Board does not, other groups will assume the responsibility.”³⁷

George Catlett, who was a member of the APB from 1965 to 1971, said that the SEC’s release was the event that prompted the board to begin taking difficult decisions on matters that would change prevailing practice, and to begin paying more attention to the SEC than to their clients.³⁸

For his part, SEC Chairman Cohen [1966, p. 59] sent a strong message to the APB in a speech in May 1966. He said that *Accounting Series Release No. 102* was an example that “Stronger leadership by the Commission is one avenue being followed” in moving toward the goal of uniformity in accounting practice. He added:

Although Accounting Series Release No. 102 was used to resolve one problem of uniformity, I do not be-

³⁶See also the searing criticism of the release by Theodore Herz [1966], one of Bevis’ partners.

³⁷AICPA – APB, minutes of meeting, December 8-10, 1965, p. 3

³⁸interviews with George R. Catlett, September 3, 1970 and May 3, 1978

lieve it will be necessary for us to use that device with great frequency—although the option is always open to us. The extent to which action on our part is required will depend in large measure on the vigor and determination of the Accounting Principles Board. . . .

In December 1967, the APB issued *Opinion No. 11*, “Accounting for Income Taxes,” which, in paragraph 57, explicitly adopted the SEC’s position in *Accounting Series Release No. 102*. The APB really had little option but to do so. Three board members dissented, saying that this treatment “would contribute to a lack of understanding of working capital, because of the commingling of contingent items with items which are expected to be realized or discharged during the normal operating cycle of the business.”³⁹ The *Opinion* passed by the barest two-thirds majority, 14-6.

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**THE END OF BETTERMENT
ACCOUNTING: A STUDY
OF THE ECONOMIC, PROFESSIONAL,
AND REGULATORY FACTORS THAT
FOSTERED STANDARDS CONVERGENCE
IN THE U.S. RAILROAD INDUSTRY,
1955-1983**

Abstract: On January 26, 1983, the Interstate Commerce Commission (ICC) announced that it would require all railroads under its regulatory jurisdiction to change from Retirement-Replacement-Betterment (RRB) accounting, to a more theoretically sound depreciation accounting for matching revenues and expenses. The change was needed because RRB did not allow for the recapture of track investment, leaving the railroads with limited capital to replace aging track lines. Over the previous three decades, it had become painfully obvious to everyone that the industry's economic woes were the result of archaic accounting procedures that lacked harmony with the rest of American accounting standards, but the ICC was reluctant to change until new tax legislation in the early 1980s forced the issue. The decision was a culmination of a debate that started in the mid-1950s when Arthur Andersen, with the help of the securities industry, began an effort to harmonize railroad and industry standards using arguments that mirror those supporting the international accounting harmonization efforts of the early 21st century.

INTRODUCTION

As the globalization of business markets grows, the debate over proper accounting standards to meet the needs of cross-border and cross-cultural investors has grown. This is especially true since the reorganization of the international standards-setting apparatus in 2001 and the creation of the International Accounting Standards Board. Even before the reorganization,

the Financial Accounting Standards Board (FASB) had attempted to harmonize some of U.S. generally accepted accounting principles (GAAP) with international principles. For example, one of the intentions of SFAS 128, *Earnings per Share*, was to make “computing earnings per share more compatible with EPS standards in other countries” [FASB, 1997, para. 1]. Other U.S. GAAP that is not yet harmonized lies in the areas of accounting for research and development and for inventories. These and other accounting standards lack current convergence with international GAAP. Though the drive to harmonize international standards continues at the forefront of changing accounting thought, this debate over diverging accounting standards is not a new one.

Nearly half a century before the current international accounting standards debate, some in the accounting profession, led by Arthur Andersen (AA), felt that railroad accounting practices required by the Interstate Commerce Commission (ICC) were rapidly diverging from GAAP and, in 1955, asked for a change. It was felt that such a divergence was a major cause of the economic hardships facing the U.S. railroad industry. At the core of these divergent practices was “betterment accounting” or, more theoretically, Retirement-Replacement-Betterment (RRB). The ICC had institutionalized the practice in the early 20th century to account for “track and way structures,” but it was rapidly becoming an anachronism in the face of modern depreciation rules.

In brief, AA and its allies felt that the ICC needed to phase out RRB in favor of depreciation accounting in an effort to allow the capital-starved railroads to recoup investments that, in some cases, were more than 50 years old. In addition, AA cited problems with comparable financial statements, problematic auditing procedures, and clarity as other reasons for the much-needed change. Ironically, the drive for international standards convergence is predicated on some of the same reasoning as Andersen’s arguments.

The ICC and the American Institute of Accountants (AIA)¹ saw no reason to eliminate the traditional method of track accounting because it tended to keep replacement costs in line with inflation. The railroads, however, were much more prag-

¹In 1886, the American Association of Public Accountants was formed. This organization began publishing the *Journal of Accountancy* in 1905, changing its name to the American Institute of Accountants (AIA) in 1916. In 1957, the organization became the American Institute of Certified Public Accountants (AICPA).

matic. They wanted to keep RRB due to the cost of the change and the impact such a change would have on their rate-of-return on assets (ROA), the centerpiece of ICC rate-making policy. In the face of powerful interests, the ICC refused the change.

This paper will discuss the efforts by AA and various public-interest groups to act as change agents to modernize railroad accounting principles and bring them into convergence with the accounting standards of other industries. The paper focuses on the efforts of the ICC to block such moves in light of congressional hearings and pressure from the securities industry. The article follows the debate from 1955 to the ICC's elimination of betterment accounting in 1983, using published research, news articles, and public documents, including those published by AA and the AIA.

BACKGROUND TO THE DEBATE

Betterment Accounting and the ICC: The process of changing from RRB to depreciation accounting for railroad track structures started nearly fifty years before AA's intervention. In 1906, Congress passed the Hepburn Amendment to the Interstate Commerce Act. This amendment provided the ICC with two cherished goals – the authority to set rail tariffs and the power to require uniform railroad accounting. With this newly found authority, the ICC issued revised accounting and reporting regulations. Under the new regulations, railroads were compelled to report systematic depreciation charges for equipment and other “non-permanent” fixed assets. This new methodology would be in lieu of the traditional “betterment” accounting methodology used by the rail industry.

Betterment accounting or RRB had developed over the previous 40-50 years to account for track and equipment. FASB [1983, para. 5], at the time of RRB discontinuance in 1983, defined the practice in Statement #73 explaining:

Under RRB, the initial costs of installing track are capitalized, not depreciated, and remain capitalized until the track is retired. The costs of replacing track are expensed unless a betterment (for example, replacing a 110-lb. rail with a 132-lb. rail) occurs. In that case, the amount by which the cost of the new part exceeds the current cost of the part replaced is considered a betterment and is capitalized but not depreciated, and the current cost of the part replaced is expensed. Railroads generally have used RRB for financial reporting.

In essence, the railroad does not recoup the cost of the track until replaced. In some years, there would be no charges to current operating expenses from track usage if no track was replaced. This lack of cost recapture from RRB was indicated by the Union Pacific [Moody's Investors' Services, 1984, p. 151] that reported in 1983: "Under this method, the cost of in-kind replacements of track structure was changed to expense when incurred. Cost of betterments (improvements) to structure were capitalized and charged against earnings only when the asset was removed from service."

At the time of the 1907 change, the ICC felt that betterment accounting simply did not reflect the true cost of the railroad's operations because in lean years there would simply be no replacements or upgrades. This policy also resulted in safety concerns for the ICC and the public. With these problems in mind, the ICC designed the 1907 change to provide a more accurate rendering of these fixed asset balances through a more systematic matching of fixed expenses with revenue. As expected, the orders set off a firestorm of protest from the rail industry because it was felt that the ICC had overstepped its bounds and had jeopardized the rail industry's financial well-being.

The railroads, however, felt that they were already recognizing "physical" depreciation of their assets through the replacement process, but the ICC was pushing for a uniform application of a relatively new concept called "economic depreciation." Over the next six years, the industry attempted to get the order changed through public protests in the press, "civil disobedience" by neglecting to send depreciation reports to the ICC, and litigation. In the end, the Supreme Court in *Kansas City Southern Railway v. U.S.* [231 U.S. 423] would rule in 1913 that the ICC had the authority and jurisdiction to compel such reporting. According to AA, the court indicated that depreciation was "an inevitable fact which no system of accounts can properly ignore" [AA, 1962a, p. 128]. Though the ICC issued the equipment depreciation orders to provide more uniformity in reporting railroad income, the ruling ironically affected each railroad differently, depending on its location, age, condition of its equipment, and maintenance schedules.² Facing these logistical problems, the ICC compromised and did not order depreciation charges for track structures. By so doing, it institutionalized RRB for track structures as part of the Uniform System of Accounts, adopted by the ICC in 1914. In the end, the railroads lost on depreciating

²See Delano [1908] for a further discussion of this problem.

equipment but won on RRB for track and other structures, by far their largest asset.

The debate over RRB for track accounting began again in 1924 with the ICC issuing new preliminary orders for the railroads to begin depreciating “permanent” fixed assets. At this point, the railroads were now “bucking” established business practices. Depreciation accounting for fixed assets came into widespread use in most U.S. industries at the turn of the century, especially after the advent of federal income taxes. The ICC now wanted the railroads to depreciate track structures and take an annual charge to match revenues and expenses better. The railroads protested the ICC’s decision. By 1932, a poor economy forced the ICC to relent and continue to allow RRB for track structures. Continued debate was put on hold for the next 20 years due to the Great Depression and World War II.

A Change in Economic Reality: By the 1950s, the railroads had to recognize a new economic reality in the U.S. with new transportation alternatives for travel and shipping. A fledgling airline industry had introduced pressurized cabins, making air travel more appealing to the traveling public. Cheap energy fueled the country’s love of the automobile, and the newly announced interstate highway system began to hurt rail passenger service. With better roads and cheap energy, an expanding and cost-efficient trucking industry negatively impacted shipping, the “bread and butter” of the railroad’s business.

The trucking industry was more cost-effective for shippers currently servicing smaller towns with “high cost,” short-line railroads, spurs off the more lucrative main-stem routes. This change placed pressure on rail revenues, causing the railroads to request abandonment of these unprofitable routes as well as a general reduction in maintenance and replacements of track structures. These economic problems facing the industry soon lead to renewed questioning of the RRB system of track accounting. Safety concerns aside, this practice led inevitably to either artificially high income or low rates of return given no recapture of capital cost.

In addition to these new economic realities for the rail industry, the Internal Revenue Code in 1954 codified the use of accelerated depreciation charges for tax purposes. Because the Code still allowed companies to use straight-line depreciation for purposes of corporate reporting, the change had the effect of creating temporary tax differences for book income and tax income, requiring a deferred taxes disclosure to corporate share-

holders. The ICC banned the use of deferred tax reporting for all companies under its jurisdiction, reasoning that it only allowed straight-line depreciation accounting for regulatory reporting, making it unnecessary for the railroads to deal with accelerated methods and interperiod tax allocations.

By the mid-1950s, these conflicting betterment accounting rules for some of America's largest corporations were viewed by some in the public accounting profession to be at variance with current GAAP rules and, consequently, at variance with the matching principle.³ Over the next three decades, a number of powerful special-interest groups and governmental organizations would array against betterment accounting with the ICC and the railroads putting up a spirited, if not misguided, defense of its cherished accounting procedure.

CHALLENGES TO RAILROAD ACCOUNTING PRACTICES⁴

AA Gets Involved: In August 1955, AA petitioned the ICC asking it to modify its position on deferred taxes. The CPA firm felt that the ICC needed to address this issue because the independent auditors might be compelled to issue qualified opinions given the lack of formal adherence to GAAP in the areas of depreciation and deferred taxes. The railroads protested the desired changes because such tax deferrals threatened to increase reported (ICC) income and, in turn, negatively influence a very sensitive balance between reported income and return on investment for rate-review purposes.

During its regulatory history, the ICC, with the help of court rulings, had settled on a basic ROA methodology to determine the efficacy of a railroad's rate structure. Simply put, if the ICC felt that the ROA for a given railroad was too high in comparison with the industry and competition, it might well rule that the railroad needed to cut its passenger or freight rates. Unfortunately, the ICC often ignored the opposite condition, denying rate relief to railroads that missed their target returns. The ICC thought that this odd regulatory process was for the public good regardless of its impact on the cash flow of the railroad or future

³The Committee on Accounting Procedure had promulgated several Accounting Research Bulletins over the previous ten years related to the issue of depreciation charges. The first, in May 1944, was ARB 22, *Report of Committee on Terminology*, which defined depreciation as "a system of accounting which aims to distribute the cost ... of a tangible asset, less salvage value over the estimated useful life of the unit...in a systematic and rational manner" [AIA, 1944, p. 179].

⁴Much of this section is derived from AA [1960, 1962a, b, 1969, 1973, 1976].

equipment replacement needs. Because of the ICC's regulatory theory, a railroad did not want its track structures subject to depreciation charges because they would lower asset balances and a corresponding increase in ROA. This myopic view of operations ignored the obvious purpose of depreciation, to recapture costs for track replacements. They did seem to understand that, due to inflation, any replacements would offset any corresponding reductions in net assets. In the end, the regulators agreed with the powerful railroads and announced in December 1956, that it would not modify its Uniform System of Accounts to incorporate interperiod tax allocations [WSJ, 1956, p. 2].

Leonard Spacek and the AIA Committee: In the meantime, the securities industry also became alarmed with the problems related to railroad accounting and formally began to study the issue. Corbin [1957, p. 86], quoting the *Wall Street Journal* (WSJ), said, "a current [AICPA] study was instigated by the New York Stock Exchange (NYSE) after consultation with the [ICC]. The exchange apparently fears that stockholders are being misled by income figures derived from the present accounting methods."

To gain a better understanding of the issues, the NYSE asked the American Institute of Accountants (AIA) to form the Committee on Relations with the Interstate Commerce Commission in mid-1956 to inquire into "clearing the principal divergencies between accounting practices of railroads and generally accepted accounting principles for other industries" [*Journal of Accountancy*, 1957b, p. 69, 1957a]. In the same article, a member of this committee, AA's Leonard Spacek, felt that these divergencies between railroad accounting and GAAP resulted in the "overstatement of current income and inaccurate property accounting." Spacek charged that railroad officials pressured the AIA committee to make sure that "no recommendations are made which would affect the railroad companies adversely from the standpoint of regulation or income." During the forthcoming congressional hearings, an ICC official would bring more "public pressure to bear by indicating dire consequences if either depreciation accounting or inter-period tax allocations were instituted." The WSJ [1957, p. 6] quoted Spacek as saying that he felt "the proposed accounting change would slash reported income by 20% and lead to higher rates."

Though the AIA felt the change was unwarranted, it did get the attention of members of a House Congressional Subcommittee that held hearings on the issue at the end of April 1957 after

the AIA committee had issued its report.⁵ In summary, the AIA committee⁶ [AA, 1962b, pp. 22-23] listed six specific procedures of ICC accounting that were at variance with GAAP procedures – (1) a number of items that would normally be deferred charges or credits are reported as expenses on ICC income statements; (2) appropriations to such accounts as sinking funds are considered expenses under ICC accounting rules; (3) only income taxes paid are recognized with no interperiod tax allocations; (4) railroads are not required to provide a disclosure of the current portion of long-term debts; (5) an acquisition adjustment account is used in lieu of separate fixed asset accounts; and (6) outstanding vouchers are considered liabilities rather than an offset to cash. Concerning each of these items, an AICPA Committee did make the judgment that, “As a result [of economic changes in the industry], the principles of determining and reporting annual income to the railroad investors differ materially from those followed by other industries” [AA, 1962b, p. 5].

The AICPA committee, however, left the most contentious issue, betterment accounting, for the final part of its discussion. The committee report began this section by noting that the ICC had studied this issue of depreciation versus betterment during World War II and had required depreciation of certain properties such as buildings and other structures,⁷ but that with continued railroad protests, it left betterment accounting practices intact for track structures. In a surprise to the CPA firms, the AICPA committee concluded that betterment accounting, though not in accord with GAAP, had a substantial authoritative basis and, consequently, there was no need to change to depreciation accounting. In defense of its position on track accounting, the committee [AA, 1962a, p. 125] wrote:

... in consideration of the long history of use of replacement accounting by railroads with respect thereto, the unique nature of this category of railroad property, its relatively stable physical quantity, and the mature eco-

⁵The congressional probe included hearings from April 30 to May 3, 1957 by the Legal and Monetary Affairs Subcommittee of the House Committee on Government Operations. The probe itself was wide ranging but focused primarily on the depreciation and tax allocation issues. The *Journal of Accountancy* [1957b] published an executive summary of the 292-page report in November 1957. The full range of the issues and arguments presented are beyond the scope of this paper.

⁶The AIA Committee Report was issued on March 28, 1957 and was published in the *Journal of Accountancy* [1957a] in May 1957.

⁷According to Boberg [1985, p. 19], the ICC required this change on June 8, 1942.

conomic status of the industry, has concluded, ... that no substantial useful purpose would be served by a change to depreciation accounting techniques in absence of evidence indicating that depreciation-maintenance procedures would provide a more appropriate charge to income for the use of such property.

The AICPA committee essentially agreed with the railroad industry and the ICC. In doing so, it developed a much broader definition of authoritative GAAP that now had its basis in historical precedent and industry usage regardless of the method's theoretical or practical basis. This was a more utilitarian approach to the way accounting principles developed and ran counter to the trend of developing a body of accounting principles based on postulates and assumptions. The AICPA would eventually attempt to institutionalize the criteria as a basis for authoritative GAAP in its 1965 publication of Accounting Research Study No. 7, *Inventory of Generally Accepted Accounting Principles for Business Enterprises*.

The congressional committee's responding summary [AA, 1962b, pp. 39-40] took exception to the AICPA's stance on RRB, but overall its reaction was mixed. On the one hand, the committee actually commended the ICC for putting the RRB issue on its agenda for study. But the congressional committee also vociferously complained about the ICC's "intransigence" in refusing to allow deferred taxes. In 1959, the ICC did make some changes related to the accounting variances listed by the AICPA but left intact RRB and its ban on deferred tax allocations. In the case of deferred taxes, the ICC again felt that since it required that only straight-line depreciation be used for accounting purposes, "only the actual tax payable need be recorded or a significant misstatement of current income can result because total tax would be the same under either method" [AA, 1962b, p. 10]. AA and the accounting profession had lost this round with the ICC on accounting issues, but the debate between AA and the Institute would continue for some time to come.

In another challenge to the ICC in July 1958, Spacek and AA inquired about the validity of the special language included in the auditor's report for ICC-regulated companies.⁸ They felt that

⁸The audit report language read: "In our opinion the accompanying balance sheet and statements of income and retained earnings present fairly the position of the company and results of its operations for the year, in conformity with accounting principles and practices prescribed or authorized by the Interstate Commerce Commission, applied on a basis consistent with that of the previous year" [Spacek, 1969, p. 510].

it did not fully comply with the ethics rule 5(e) of the *Code of Professional Conduct*. In a flurry of letters between the firm and the AICPA ethics committee, a brisk debate ensued with AA stating: "We have long questioned whether this form of the auditors certificate is acceptable under rule 5(e) ... since it does not say whether the financial statements are in conformity with generally accepted accounting principles" [Spacek, 1969, p. 503]. In response to AA's inquiry, on March 23, 1959, the AICPA's ethics committee reaffirmed the current language of the auditor's report and did not require an explanation of the deviation between railroad accounting and GAAP because the accounting treatment had a legal or authoritative basis as prescribed by the ICC. The report went on to say that "the Institute's Auditing Procedures Committee has not spoken specifically on reports of railroads. ... [and] ... In absence of some authoritative statement prescribing the reporting standards for what has been concluded is a special reporting problem, the validity of any reporting practice must rest on general use and general acceptance" [Spacek, 1969, p. 510]. The language would remain for another 25 years.

Again, AA's desire for change in railroad reporting requirements was stymied, but the firm laid down some general principles in the process. First, the firm saw a need to make railroad audit reports understandable and transparent to users. Second, it felt the need to harmonize both accounting and auditing standards.

With two setbacks now, AA took a new approach in dealing with the ICC-GAAP variance problems by asking the ICC to allow the railroads and other regulated companies to publish statements in accordance with GAAP while continuing to use ICC Uniform Account rules for ICC reporting. The ICC balked at the proposal at first and issued a preliminary rule in December 1959 ordering that no ICC-reporting company could issue any type of financial statements that varied from ICC accounting rules. The proposed rule generated huge opposition from the accounting profession, securities regulators, and the NYSE. The regulators and the accounting firms felt that the ICC was attempting to exercise powers over railroad securities transactions never intended by the Interstate Commerce Act, an area of concern skirted by the congressional hearing. With the exception of the railroads, most other ICC-regulated companies, such as trucking and bus lines, protested the proposed rules because of the difficulty they would face in securing both debt and equity financing in the markets without GAAP financial statements matching revenues and expenses.

In the face of the protest from all quarters, the ICC rescinded its preliminary rule two years later in January 1962. A new rule allowed ICC-regulated companies to elect to publish GAAP financial statements with the caveat that they must make a footnote disclosure of the differences in income reported under GAAP and the ICC Uniform Accounting System. They, of course, were still required to report to the ICC using the Uniform Accounting System. As will be reported later, few ICC railroads took advantage of the new financial reporting practices options because they would have to maintain two, possibly three, sets of books. Even with the compromise, this round of the depreciation debate had ended in a draw. The CPA firms had won some reporting concessions; other regulated companies had gained some flexibility in their financial reporting; the ICC had maintained its stance on deferred taxes; and, most importantly for this story, the railroads continued to use RRB accounting for the time being. Except at AA, the issues raised by the debate began to fade from the memories of most participants.

Andersen Challenges the AICPA's Theory: In its 1969 edition of its series *Accounting and Reporting Problems in the Accounting Profession*, AA reported that it had renewed the debate over RRB with a letter to the AICPA in 1965. The correspondence was an attempt to persuade the Institute to reverse its position on betterment accounting. In 1966, the AICPA issued a response to AA. In the letter, the AICPA continued to assert that RRB accounting had substantial authoritative support (e.g., *Accounting Research Study No. 7*). Though AA's discussion did not identify the criteria on which the AICPA based its opinion, it may have been related to the criterion that read: "Each business entity must follow generally accepted accounting principles i.e. those which have substantial authoritative support in order to obtain an unqualified opinion from certified public accountants" [Grady, 1965, pp. 33-34]. Grady explained that accounting entities should, "[a] choose the accounting practices and methods of application most suitable to the needs and purposes of the entity and which,...will most fairly present the financial position and results of operations, and [b] at the same time, follow accounting practices and methods of other business entities."

The AICPA had again taken a utilitarian view of betterment accounting as it met the needs of the rail industry even though it did not harmonize with the growing body of accounting theory. The AICPA reiterated its original defense of betterment accounting as authoritative. According to Sayers [1979, p. 12], the

AICPA defense made the following points:

- It has been used by the railroad industry for many years.
- Track components are unique in nature.
- There is a relatively stable physical quantity of track industry-wide.
- The industry is mature economically.
- Current operating charges under betterment accounting approximate those under depreciation accounting given a stable program of track maintenance.

By 1976, AA had chipped away at these “justifications” and provided several criticisms of betterment accounting. The first was that betterment accounting had acted as an impediment to proper tariff rate making. Since rates are based on costs, the carrier that deferred maintenance, or did not use depreciation, could find itself failing to recoup capital through the railroad rates and, correspondingly, not having the capital to replace track structures. AA [1976, p. 151] wrote: “Had the railroads adopted depreciation accounting for the costs of grading and track structures, these costs could have been considered in the establishment of railroad rates in the past and been recovered through those rates and deducted for income taxes. This recovery of cost would have placed the railroads in a much stronger financial position today.”

In fairness to AA’s arguments, the ICC’s rate setting was an inflexible and archaic legal and regulatory structure that did not mesh with modern capital management concepts. For example, cost behavior theories related to fixed and variable cost functions and operating “economies of scale” were virtually ignored by the ICC when determining rail tariff rates.

The next criticism dealt with the inconsistent track maintenance and replacements practices of many carriers in contradistinction to a major AICPA justification. Simply put, if a carrier elected to defer track maintenance and replacement, there were no charges against income for the use of the track in the year of deferral.⁹ Decreased expense levels led to high income and correspondingly higher taxes, a frequent situation in World War II when, “railroads were generating substantial revenues but they

⁹In a “regulatory irony,” the ICC partially agreed with AA’s position in a 1949 study cited by the congressional panel. The report read, “... manipulations through deferring track work is subject to some limitation because of safety requirements. Track in unsafe condition cannot be drawn from service as in the case of equipment. The ICC was treading a thin line by admitting the problem but dismissing it as unimportant because no railroad would ever leave its track in that bad of condition” [*Journal of Accountancy*, 1957b, p. 73].

could not make extensive physical replacements of track structures due to 'war shortages.' Thus, the railroads were placed in a position of paying [higher] taxes because the improper accounting procedures utilized failed to recognize the capital costs incurred to provide rail service" [AA, 1976, p. 151]. Again, this practice seemed to be one of many contradictions in the railroad industry's efforts to maintain or increase ICC tariff rate levels. In this case, a higher income probably would have resulted in a corresponding increase in the road's ROA, precluding it from getting rate relief.

Finally, the "stable physical quantity" justification cited above was also no longer valid in light of the elimination or abandonment of substantial quantities of existing track. AA felt that new technologies (e.g., air and trucking services) limited or eliminated the remaining economic life of the track structures. AA felt that betterment accounting "has led to misstatements of economic fact and have had serious adverse financial repercussions in terms of ... the railroad's ability to maintain its financial strength through the recovery of its capital investment, its ability to determine the cost of providing rail service and therefore to have appropriate service rates established" [AA, 1976, p. 148]. The firm [AA, 1976, p. 152] further explained: "If depreciation that recognizes economic obsolescence is not adopted and if replacements are deferred because of an inability to obtain sufficient replacement capital, large amounts of the original capital cost of the track structures will remain on the balance sheets even though service value of the assets represented by those costs is declining."

A GAO study [1981, p. 8] also used the AICPA justification criteria. The GAO, however, concluded that the economic conditions had changed since 1957, and that betterment accounting "gives only a limited and obscure view of the effects of inflation on the railroads because it concerns only a portion of the operating cost – costs associated with track structure replacements." AA pointed out that the massive bankruptcy of the Penn Central in 1969 was, in part, due to the problems caused by ICC accounting rules that left the railroad with little capital to make replacements. Finally, AA [1976, p. 148] indicated that the "adoption of depreciation accounting will facilitate management decision making in ways including product service pricing and financial planning."

Finally, AA [1976, pp. 151-154] went on to list three benefits to depreciation accounting. The first was that depreciation accounting would "improve financial reporting, through the

consistent and uniform application of these principles over all of the railroads, and would be consistent with other industries.” Second, AA felt that, “depreciation accounting would facilitate proper pricing” through the recovery of fixed costs. Finally, “depreciation accounting would improve financial planning” because more consideration would be given to the levels of track structures needed and corresponding depreciation charges when dealing with economic obsolescence of the fixed assets. In the end, AA never persuaded the ICC to change either its fixed asset accounting policies or its stance on deferred taxes. However, it did set the stage for the final series of debates that would spell the end of RRB accounting.¹⁰

Other Voices: Except for AA’s published arguments against RRB and its visible dispute with the AICPA, there was actually a dearth of published literature for or against RRB during the 1960s. This was probably due to the arcane nature of an issue everyone assumed had been settled decades ago. By the mid-1970s, only two prominent articles [Reynolds, 1964; Coleman, 1970] surfaced from the academic and professional communities that challenged the status quo.

REGULATORY REFORMS

The Railroad Revitalization and Regulatory Reform Act: In 1972, AA made one more attempt at changing the mind of the ICC regarding its accounting practices. In a December 1972 letter, the firm [AA, 1973, p. 73] suggested four benefits justifying an accounting change. The change to depreciation accounting would promote uniformity of accounting, foster cost regulation and reduce incentives to postpone retirement, improve information for regulatory purposes, and reduce the potential for the management of income.

This time AA streamlined its arguments and concentrated on issues of corporate governance and safety problems within the railroad industry. The list appears closely related to the perceived reasons for the Penn Central debacle. Norby [1981, p. 77] noted some of these reasons when he explained, “opponents of betterment accounting believe that it allows railroad manage-

¹⁰As a side note, during the period of time that AA was quarrelling with the ICC and the AICPA over the propriety of RRB accounting, the IRS actually was bolstering its support for the methodology through the issuance of several revenue rulings. These rulings and other tax issues related to RRB are discussed later in the paper.

ments to overstate income in periods of economic recession by curtailing track maintenance and that obscures the failing condition of such roads as Penn Central's because net income can be sustained despite deteriorating roadbeds."

It was evident from the analysis that management decision making at Penn Central and similar railroads was clouded by poorly designed and differentially applied accounting principles that allowed the financial problems of the company to be hidden. AA felt that more uniformly applied accounting principles would have helped with the Penn Central problems, especially in the areas of management decision making and regulatory actions. Though AA did report in the 1973 edition of *Accounting and Reporting Problems* that the ICC had set up an accounting study group, nothing apparently came of the endeavor. In the face of mounting criticism, the ICC "circled the wagons" and did nothing to change its accounting practices, but the economic downturns and internal financial problems that would affect the health of the rail industry were just around the corner.

To combat these problems, Congress acted by passing several pieces of legislation aimed at deregulating railroads and strengthening their financial health. The first of these was the Railroad Revitalization and Regulatory Reform Act of 1976 (4R Act).¹¹ According to the Ford Library [2004], 4R Act provides for more efficient, more competitive, and thus less costly rail transportation; increases competition between various kinds of transportation and encourages a better utilization of resources by assuring that goods are transported by the most efficient means of transportation; eliminates certain antitrust immunities which permit carriers to set and hold rates at unreasonably high levels; assures that regulation provides adequate protection to consumer interests; provides needed financial assistance to the railroad industry;¹² and encourages speedy and rational restructuring of the railroads which will improve their economic health.

Babcock [1984, p. 4] points out that the Act allowed for the "variable cost of rail transport to be recognized as the minimum rate." Under these new rules, "rates equal to or greater than variable cost could not be declared 'unreasonable' unless so proven."

¹¹This legislation came on the heels of internal criticisms by the staff of the ICC itself. An article in the *New York Times* [1976, p. 2] indicated that, "the Interstate Commerce Commission's enforcement of the law has no overall purpose and concentrates on economically insignificant cases."

¹²At this time, there was a restructuring within the rail industry that saw the development of Amtrak in 1973 and the merger of a number of eastern railroads into Conrail in 1975.

This order ran contrary to the old ICC rate theory that had not always allowed for the recapture of fixed costs. In addition, the ICC could now eliminate regulation in markets where railroads had no “market power” and competed directly with other modes of transportation.

According to the 1976 *ICC Reports*, one of the lesser-known provisions of the Act was to create “a wholesale revision in the format and content of the Annual Report R-1” [ICC, 1976, p. 1598]. The new report, which was to be in effect by January 1978, was to be more proactive in nature and provide the ICC with better revenue and expense data along with “funds flow” information.¹³ In addition, the ICC reported that it had conducted a new study of depreciation versus betterment accounting. To no one’s surprise, it concluded: “The results of the study on the Western Maryland Railway showed that the rate base or rate of return does not significantly change by application of depreciation accounting to the track structure” [ICC, 1976, p. 1536]. This is similar to the AICPA comments from 1957 that indicated that accumulated depreciation applied to railroad structures was similar in total to replacement expenses. The ICC did comment that there were still problems with the tax consequences of betterment accounting as applied to railroads. The ICC [1976, p. 1537] now began to see that the end of betterment accounting was at hand: “Until the difficulties of changing over from betterment accounting are resolved, it cannot ascertain if such a changeover would inure to the public benefit. However, the Commission should keep apprised of the methodologies used in such matters, and conduct depreciation feasibility studies and develop depreciation schedules for various accounts.”

At the end of this portion of the report, it was noted that: “[the] Coordinator recommends continued research into the updating and upgrading of the Commission’s depreciation data base and the process used to analyze depreciation.” Though not reported until early 1979, the ICC accepted certain revisions for railroad accounts related to provisions in the 4R Act that would go into effect in January 1978. One of the first items addressed by the new accounting regulation was railroad compliance with GAAP, an AA request from nearly 20 years prior. The new regulation quoted from the Act as requiring that accounting systems be established that “are in accordance with [GAAP] uniformly

¹³Again, the ICC was late in the application of modern accounting methodology because it had been nearly 15 years since the Accounting Principles Board issued Statement No. 3, *The Statement of Source and Application of Funds*.

applied to all common carriers by railroads subject to this part, and all reports shall include any disclosure appropriate under generally accepted accounting principles or of the Securities and Exchange Commission” [ICC, 1979, p. 125].

The 4R Act did not have the force of putting the SEC in actual control of the railroad’s securities regulations, but it had the desired effect of taking most reporting requirements out of the hands of the ICC after nearly 70 years. Even with this change in external reporting, the ICC maintained its stance on RRB and as of April 12, 1977, denied a Department of Transportation (DOT) petition to change the accounting methods for track structures. The DOT, in its petition, took the position that the ICC’s policies create an incentive “for railroad management to allow deterioration of fixed assets” [SEC, 1977, p. 81]. In addition, there was no mention of the ban on interperiod tax allocations but for methodology on how to deal with some “reversing timing differences.”

SEC Intervention: In April 1977, the SEC finally entered the fray over the RRB issue with a docket ruling against the Burlington Northern Railroad. The SEC became concerned about a rash of accidents at the railroad and felt that part of the problem lay with lax policies regarding track maintenance and replacement. It was felt that a lack of disclosure of these policies and their effect on the company’s income was hurting the investing public. The SEC ordered the railroad to make certain disclosures regarding these issues, but it did not have the ability to apply this order to deal with an industry-wide problem.¹⁴

The SEC again acted in May 1977 [SEC, 1977] and issued preliminary orders regarding the rail industry’s deferred maintenance and depreciation disclosures. The impetus seemed to come from AA’s original concerns arising from an internal rail industry report. This report commented on how replacement cycles in the industry were greater than the average useful lives of new rail and ties. This problem concerned the SEC because RRB accounting did not fully disclose replacement patterns to the shareholders and the markets and, hence, future cash outlays. Though the SEC never published final orders on this issue, it did take the railroads to task for their accounting policies and made it clear to the ICC that it needed to address these problems.

¹⁴File No. 3-5211, promulgated April 28, 1977

The Staggers Act of 1980: Despite the deregulation efforts begun by the 4R Act, the railroad industry struggled through high interest rates, high inflation, and the general economic recession of the late 1970s. To help mitigate the situation; Congress passed the Staggers Act, which reversed nearly a century of “rigid” regulation. It had profound effects on railroads and the ICC:

- The ICC no longer had jurisdiction over maximum rail rates unless market dominance exists and/or the rate is 180% or more of variable cost.
- As an upgrade to the 4R Act, the ICC no longer had jurisdiction over minimum rates as long as they at least covered variable cost.
- With some stringent limits, the railroads may provide contracted rates with specific carriers.¹⁵
- Again, as an upgrade to 4R Act, the ICC may exempt railroads from markets where they have no market power. This represented a change in rules originally designed to eliminate market sharing by railroads.
- General rate increases may be made quarterly to offset the impact of inflation.

For the railroads and the ICC, the Staggers Act created a new, free-market business environment that the railroads had not known for nearly a century. Babcock [1984, p. 6] writes: “the Staggers Act permits a great deal of pricing freedom. [To] ensure that competitive forces determine rail rates, the Staggers Act severely restricts joint ratemaking. No single-line rail rates may be discussed in rate bureaus, and joint rates may be discussed only by ‘practicably participating’ carriers.”

In response to the regulatory reforms, Odening [1980, p. 66] reported in *Forbes Magazine* that there would be an announcement within the next 12 months that the ICC would begin to allow railroads “to capitalize some track costs and then depreciate them.” The article went on to explain the now familiar refrain from the railroads that the change over to depreciation would be costly both in terms of the switch-over costs (estimated in excess of \$300 million industry-wide) and in terms of higher “cash-based” taxes resulting from the new, and presumably lower, “non-cash” expenses. Finally, the report indicated that Congress was about to act to remedy the situation by legislation that would “freeze the manner in which industry taxes are calculated.” Congress, in essence, was assuming that a lower

¹⁵This was a practice outlawed by the original Interstate Commerce Act of 1887.

tax bill for the industry would give the railroads an incentive to finance more maintenance and replacement of track. The industry had mixed emotions with respect to this assumption, but the article reported that the market was “cautiously bullish about the proposed accounting change.”

The proposed legislation discussed in *Forbes* turned out to be quite different in nature than expected and came in the form of Public Law 96-613, *Miscellaneous Revenue Act of 1980*, which President Carter signed into law on the eve of his departure from office. Surprisingly, the bill turned out to be supportive of the industry’s position on betterment accounting and had the effect of specifically making the methodology legally acceptable for federal income tax purposes. From the industry’s myopic point of view, the need for this legislation was clear – institutionalize RRB in the tax code before it was banned.

The swift reaction of the industry to the potential accounting change reported by the ICC and supported by the Staggers Act changes showed that the railroad industry continued to have a considerable amount of political influence. Conversely, the ICC’s proposed change may have been a “trial balloon,” designed to galvanize industry reaction and protect RRB. In the end, the sweeping railroad regulation reforms and some partisan tax legislation seemed to have two major effects. First, it created a new environment whereby the need for an ICC now became suspect. Second, and more ironically, the law had the effect of nearly derailing accounting reforms as the ICC, now mortally wounded due to the mandate of the Staggers Act that rate targets be developed using RRB-based numbers, institutionalized RRB-tax deductions. Any new accounting reforms by the ICC seemed to be dead on arrival, but not before the IRS had its say.

The GAO Study: While Congress began debating new tax legislation for 1981, it directed the GAO to review the accounting and reporting practices of the ICC and the railroads. On February 4, 1981, the comptroller general issued a 51-page report entitled, *Accounting Changes Needed in the Railroad Industry*. The report’s executive summary [GAO, 1981, p. iii] stated the following:

In contrast to other industries, which use depreciation accounting for capital assets, railroads used a unique betterment accounting method for their track structures. GAO believes the Interstate Commerce Commission and the Securities and Exchange Commission should require railroads to adopt depreciation accounting. This would enhance the comparability of railroad’s

financial reporting, assist the Congress in deliberations on regulatory reform and financial assistance to railroads, and provide better information for shippers and small investors. Railroads should also include information on their maintenance and replacement practices including deferred maintenance, in financial reports.

The three primary arguments for depreciation accounting set forth by the GAO again mirror those first brought into question by AA nearly a quarter century before. The first GAO argument for depreciation was, of course, improved expense recognition. Second, the GAO felt that it provided improved balance sheet presentation. Finally, the enhanced comparability of financial information would help Congress and other users of the information make better decisions. The new depreciation standards would help coordinate the efforts of regulators and the markets and, by extension, the management of the railroads as well, especially in the area of capital improvements and safety concerns.

Though convinced that depreciation accounting was superior, the GAO study, using data provided by the industry, pointed out the major problem that, with a change in accounting methods, there was every indication that net income would be substantially higher, as much as 35% [GAO, 1981, p. 21].¹⁶ Higher reported net income should have been good news for any company, but for a railroad industry that had followed unsound ICC accounting practices for three quarters of a century, there would be no expense shield, leading inevitably to increased taxes and a cash outlay that struggling roads would find difficult to absorb. It was clear from the report that any change in depreciation recognition would need a corresponding change in the tax code. This led to the GAO's response to the passage of Public Law 96-613 on December 28, 1980: "There is no reason that the railroads cannot use betterment accounting for income tax purposes and depreciation accounting for financial reporting purposes" [GAO, 1981, p. 19, fn.].

In the end, it appears that from 1976 through 1980, the ICC changed its tack to preserve betterment accounting by focusing on the presumed detrimental cash flows for the railroads. The

¹⁶The GAO [1981, pp. 22-23] study had to admit that the income studies came from the railroads and the ICC and were not verified for their reliability. The idea that income would be that much higher could only occur if the railroads were actually making scheduled replacements of track. Evidence pointed to the fact that this was not really happening.

ICC knew the change was coming and tried to postpone it until the actual decision was out of its hands, resulting from either a tax code change or some legal remedy. The GAO [1981, p. iv] commented that, “the ICC agrees that adopting depreciation accounting would benefit financial statement users. However, the ICC has been concerned that the accounting change would increase Federal income taxes and undermine the financial stability of even the healthiest railroads. ICC has been waiting for the tax issue to be resolved before further considering the adoption of depreciation accounting for track structures.”

From a regulatory point of view, the final obstacles for the switch to depreciation were Staggers Act problems associated with the calculations of income and return targets for rate pricing based on betterment accounting data. The Staggers Act, however, turned out to be more “flexible” than anticipated, paving the way for the final changing of the accounting procedures [ICC, 1984, p. 158]. The venue for the final changes moved from the ICC and the GAO to the U.S. Congress as it debated tax legislation that would spur a faltering economy. Congress had to again deal with problems related to railroad health and, in so doing, had to address the question of tax deductions that would promote capital recovery in the industry.

TAX REFORM AND THE END OF BETTERMENT ACCOUNTING

The Early Use of RRB for Tax Purposes: Since the ICC institutionalized RRB in the early 20th century, the federal government had given tacit consent to its use of income tax assessments for businesses. For example, the U.S. Treasury Department accepted the use of RRB for determining income for tax purposes. According to Coughlan and Strand [1969, p. 24], some of the first regulations establishing RRB for track structures, when taxing authorities concurred, permitted “a reasonable allowance for the exhaustion, wear and tear, including a reasonable allowance for obsolescence, of property used in a trade or business or held for production of income.”

Over the following decades, the IRS commissioner continued to support its use for tax purposes.¹⁷ For example, Sec. 41 of the 1939 Code provided support for consistency in the general rule for methods of accounting by indicating that:

¹⁷See *The Chesapeake and Ohio Railway Company*, 64 TC 352 (1975) for a formal discussion of the commissioner’s approval.

The net income shall be computed upon the basis of the taxpayer's annual accounting period ... in accordance with the method of accounting regularly employed in keeping the books of such taxpayer; but if no such method of accounting has been so employed, or if the method employed does not clearly reflect the income, the computation shall be made in accordance with such method as in the opinion of the Commissioner does clearly reflect the income.

The Board of Tax Appeals in *Central Railroad Company of New Jersey v. Commissioner* [35 B.T.A. 501 (1937)] also recognized the commissioner's power: "[the commissioner] is given discretionary power to determine the effectiveness of the taxpayer's method of accounting for use in computing taxable net income, and, if the method does not clearly reflect the income, the statute directs him to make the computation by such method as in his opinion does clearly reflect the income."

The Supreme Court also addressed the use of regulatory accounting methods for federal income tax in the *Old Colony Railroad Company v. Commissioner* [3 USTC 880, (1932)] decision. The issue in this case related to the inclusion in taxable income of a later year part of bond premium received before March 1, 1913. The ICC required the Old Colony Railroad Company to amortize the bond premium over the respective lives of the bonds. The IRS commissioner asserted that the same treatment should apply for tax purposes. The Court did comment on the weight of ICC rulings on computing taxable income, saying that "the rules of accounting enforced upon a carrier by the Interstate Commerce Commission are not binding upon the commissioner, nor may he resort to the rules of that body, made for other purposes, for the determination of tax liability under the revenue acts."

Over 40 years after the decision in the *Old Colony* case, the Supreme Court again considered the use of regulatory accounting in *Idaho Power Co. v. Commissioner* [74-2 USTC 9521]. The Court's comments describe the attitudes of the commissioner and the railroads during the 1913-1954 period regarding the acceptance of certain accounting procedures. While the IRS commissioner was not required to accept the RRB method of accounting, he approved of its use. In the course of time, several railroad companies¹⁸ attempted to recognize depreciation

¹⁸See *Central Railroad Company of New Jersey v. Commissioner*, 35 B.T.A. 501 (1937) and *Chicago and Northwestern Railway Company v. Commissioner*, 40-2 USTC 9583 (CA-7) (1940).

charges using the straight-line method on part of their property. In each case, the commissioner required the use of the RRB method. The courts decided in favor of the commissioner in each case by pointing out that taxpayer railroads had not obtained the permission of the commissioner before changing to the straight-line method.

The Commissioner's Continued Approval of RRB during the 1960s: At the same time AA and the AICPA were struggling with the theoretical underpinnings of RRB, the IRS was enhancing its recognition of the method through a series of rulings starting with Revenue Ruling 67-22 [1967-1 CB 52]. Though this ruling dealt with a narrow issue related to track welds, it did help to explain RRB's general application and, in doing so, gave a positive assent to its use. Essentially, the ruling indicated that RRB represents a rough equivalent to depreciation accounting in track.¹⁹

This argument bolstered both the ICC's and the AICPA's opinion that RRB had authoritative support. Two additional rulings [Rev. Rul. 70-163, 1970-1 CB 43; Rev. Rul. 73-135, 1973-1 CB 80] further defined the extent of allowable RRB deductions in lieu of a depreciation charge. Even when a railroad replaced a substantial portion of its railroad track during 1966 and 1967, Revenue Ruling 73-135 held that deductions under the retirement method resulted in a reasonable allowance for depreciation where "the taxpayer has consistently employed the retirement method of accounting and has maintained continuously a regular and consistent practice of handling retirements and replacements."

Though not explicitly mentioned, it is clear that the IRS was watching the railroads for "income management" through increasing replacements in years of higher earnings and limited replacements in low-income years, a problem that would not occur under a more traditional definition of depreciation. According to AA [1962a, p. 132], a 1931 ICC report highlighted this particular earnings management problem with RRB accounting.

¹⁹According to the ruling, "depreciation" comes from: [1] the cost of replacements in kind and quality less the salvage value of the materials recovered; [2] the cost of the uncapitalized portion of replacements where betterments are involved, less the salvage value of the materials recovered; [3] the capitalized cost of retirements without replacements the salvage value of the materials recovered; and [4] the labor costs incurred in retirements and replacements.

The Application of Railroad Depreciation and the 1954 Code: In 1954, a new tax code replaced the earlier 1939 edition. Regardless of the ICC's capitalization rules for railroads, the general rules for depreciation in Sec. 167(a) of the 1954 Code remained similar to those of 1939 with no specific mention of RRB. The new code, however, did have one major change; it allowed the use of accelerated methods to calculate depreciation deductions. In addition, the general rules for methods of accounting in Sec. 446(a) of the 1954 Code were also similar to 1939, providing that "taxable income shall be computed under the method of accounting on the basis of which the taxpayer regularly computes his income in keeping his books." Such language bolstered ICC claims that RRB was an accepted standard, but it left many railroads unable to recapture investment costs.

With the new code, some railroads made renewed efforts to use depreciation methods other than the RRB method for tax purposes. Several railroad companies first attempted to deduct depreciation on lines that were about to be abandoned. The commissioner rejected these attempts and required that the taxpayers continue to deduct depreciation as retirement or abandonment actually occurred. The courts sided with the commissioner regarding rails and like assets. However, some railroad companies found success in deducting depreciation for costs in the specific areas of grading and tunnel bores which, before 1969, were only deductible in the year of actual retirement. After 1968, Sec. 167(a), IRC provided for "a depreciation deduction a reasonable allowance for the exhaustion, wear and tear (including a reasonable allowance for obsolescence)...These assets are not subject to exhaustion due to wear and tear but could eventually become obsolete."

The difficulty for the railroads was in ascertaining a reasonable and determinable useful life for the asset, a problem they would also face if RRB were ever phased out. In some cases, the taxpayers attempted to deduct depreciation of grading and tunnel bores that were placed into service in prior years based on a service life that was calculated using projected obsolescence. These cases seemed to relate to tax years beginning in the mid-to-late 1950s, ending in the early 1960s. The railroads went on to use statistical methods to predict future obsolescence.

For example, the Chesapeake and Ohio Railway (C&O) [64 TC 352 (1975)] claimed that it should be allowed to take depreciation deductions for the years 1954 through 1963 for its tunnel bores because the determinable useful lives of the assets were not more than 50 years because of foreseeable obsolescence.

The Court held that the C&O could deduct depreciation of its grading and tunnel bores over a fifty-year period and indicated that its decision was consistent with the 1969 Tax Reform Act, Sec. 185 that allowed railroad companies to amortize the cost of grading and tunnel bores first placed into service after 1968.

Using the C&O case as a guide, several railroads were successful in obtaining depreciation deductions for grading and/or tunnel bores by providing convincing evidence of useful lives.²⁰ By way of contrast, the Spartanburg Terminal Co. [66 TC 916, 1976, 1982] relied on the C&O decision but failed to establish a reasonable useful life for its assets and was denied a deduction for a depreciation charge. In *Burlington Northern Inc. v. U.S.* [82-1 USTC 9250], the Court of Claims also considered the issue of depreciation deductions in the mid-1950s for railroad grading and tunnel bores. The evidence provided by expert witnesses did not convince the Court as to the validity of the estimates of useful lives, and it denied the deductions. Subsequently, the Tax Reform Act of 1976 added an election to amortize pre-1969 railroad grading and tunnel bores over a fifty-year period for taxable years beginning after December 31, 1974. One consequence of the election under Sec. 185 was that it barred deductions at the time of retirement or abandonment of a railroad grading or tunnel bore. The amortization of the costs, however, would continue.²¹

The Economic Recovery Tax Act of 1981: During this time of heavy litigation over such arcane matters as tunnels bores, most railroads continued to use RRB for track structures when computing taxable income. Changes in the methodology, though, would be coming with the Economic Recovery Tax Act of 1981 that classified track structures under the Accelerated Cost Recovery System as five-year property.

Williams [1981a, p. 35], a reporter for the *WSJ*, wrote that the 1981 changes in depreciation of track structures provided

²⁰*Southern Pacific Transportation Co.*, 75 TC 497 (1980), *Kansas City Southern Railway Co.*, 76 TC 1067 (1981), *Seaboard Coastline Railroad Co.*, 54 TCM 1334 (1987), and *Louisville and Nashville Railroad Co.*, 54 TCM 1352 (1987)

²¹The Tax Reform Act of 1986 repealed Section 185 for property additions after December 31, 1986. The House Report [1986, p. 174] explained that Congress enacted the special amortization provision for railroad grading and tunnel bore expenditures in 1969 to encourage investment in light of uncertainties about the useful life of such property. The scope of the provision was extended in 1976 to cover expenditures for pre-1969 property. The committee believed that continuation of the benefit was inconsistent with tax reform.

railroads with the ability to reap substantial tax savings. An estimated \$1.5 billion in tax benefits was projected for 1981 if all railroads elected the most accelerated depreciation method. The article went on to say that there was some concern that the railroads, which paid only \$600 million in taxes for 1980, would not be able to use all of the deductions. Presumably, they would have been able to obtain tax refunds from prior years by carrying back net operating losses. In a related story, the *WSJ* [1981, p. 35] noted that the continuing shortsightedness hurt the rail industry by not taking full advantage of the provisions in the same tax act. The article specifically noted that the rail industry had “neglected” to order enough new rolling stock (boxcars) to take advantage of the newly “reinstated” investment tax credit. The article then noted that, “railroad officials felt sensitive about the topic but a well-placed industry source confirms that railroads, for economic reasons, missed a chance for one type of windfall under the tax law change.” The myopia of the industry and that of the regulators continued.

The ICC Ends RRB Accounting: After the GAO issued its report and before Congress passed the Economic Recovery Tax Act of 1981, the ICC announced in March 1981 that it had instructed the railroads to perform certain depreciation studies. These industry studies and others finally put the ICC on a fast track towards changing its basis for track structure accounting. Fahrenwald [1981, pp. 11, 15] reported in *Railway Age* that the ICC now “feels that the time may have arrived to do away with RRB.” The article pointed out many of the same arguments against the change as the GAO report, especially in the area of higher taxes, but a Mr. Holmes, an ICC accounting systems researcher, indicated in an interview that RRB accounting:

... is all well and good while the track is being maintained. But, if track replacements are being deferred you'll be charging too little to operating expenses. If suddenly you accelerated your replacements, you'll be charging too much to operating expense. When you replace the track, it gives recognition [in an accounting sense] to the track's deterioration. But replacement doesn't always occur in uniform manner – though deterioration usually does.

After 25 years, the ICC began to understand AA's original arguments for depreciating track structures to match revenues and expenses better. The article ended with Holmes comment-

ing: "On [the] one hand there's a bunch of railroads that like it, but they're getting money from the government [and prefer higher earnings]. Other railroads are more concerned from a tax point. It's up to us to come to a decision separate from all that." This last point was the central thrust of the GAO's argument that depreciation needed to be required regardless of the short-term tax effects on the railroads.

After years of debate, on January 26, 1983, the Commission voted to change the method of accounting for railroad track structure from RRB to depreciation accounting. The ICC [1984, p. 158] explained, "after reviewing comments, we have decided that track structure should no longer be treated differently from other assets for accounting purposes." It went on to say: "We have concluded that, because depreciation accounting [unlike RRB] related cost consumption to the utilization of assets over time, it should be used for all assets except land." The concept of cost matching had finally taken hold. In a symbolic, last effort to defend RRB, however, the ICC report [1984, p. 158] averred: "We recognize that historical depreciation accounting fails to reflect the impact of inflation. But, depreciation accounting can be based on inflation-adjusted costs and can thereby reflect the impact of inflation." The ICC after 75 years had changed its policy but apparently not its long-held opinions.

Even though the Commission had voted for the change, it would not make the official announcement for another month. In the meantime, the *WSJ* ran several articles on the topic. In the first article, published on February 4, 1983 [*WSJ*, 1983b, p. 3], the *WSJ* mentioned that the ICC "has been trying for about four years to decide whether to let railroads use depreciation accounting for all their capital expenditures. Impetus for approving depreciation accounting came from a 1981 tax law that permitted roads to use the methods in earnings reports to the Internal Revenue Service." The article also speculated that earnings of railroads reported to stockholders could increase by as much as 20%.

In a follow-up article, Paul [1983, p. 4] reported the potential "paper profits" that the railroads would generate with the accounting change. This article included several interviews with railroad executives. Their opinion of the change varied from mild support to utter contempt. A CSX executive was quoted as saying that a railroad's "annual costs would decrease and profit would increase – but only on paper. This doesn't add one penny of cash to the railroad." The rail industry executives then slipped into their old arguments against the change and indicated de-

preciation accounting could “hinder efforts to secure federal approval of proposed rate increases and could force some lines to pay higher state income and property taxes.” One Southern Railway executive said that, “we’re going to be fair game for unions and stockholders.” However, several other executives quoted in the article took a contrary view of the situation and said that depreciation accounting is probably better than existing methods because railroads would not have to continue the practice of deferring track replacement. In the end, it was hoped that investors would see the benefit of the change, “once railroads are reporting profit on the same basis as other corporations.”

Finally, the *WSJ* [1983a, p. 3] announced that the ICC had indeed required the change. According to the article, the change “will boost [the] roads’ reported profits.” This article then attempted to explain the theoretical difference between RRB and depreciation accounting. It reported that the railroads would begin using the same depreciation accounting for track structures as they had been using for equipment costs. To this point, track improvement costs were “written off in the year they were incurred.” The article then explained, “the current method results in showing higher costs within the year an investment (actually replacement) is made and thus lower profits reported to the ICC. But the adoption of depreciation accounting will have the reverse effect, reducing costs and inflating reported profits when track improvements occur.” In its final analysis, the article revealed the central problem that caused the railroads to delay any change as follows:

Under a 1981 law, railroads for tax purposes have had to use depreciation accounting for track work. Although the Securities and Exchange Commission suggested using the same approach for reports to stockholders, and to the public, only a few roads have done so. Some roads fear that doing so would boost pressure for them to raise wages and dividends and make it harder to get the ICC to approve freight rate increases. It is estimated the change will boost profits shown by railroads as much as 20%.²²

²²Evidence of the tax problems (in reverse) appeared as the Burlington Northern “reported net income, restated for changes in its method of oil and gas accounting, of \$146.6 million, or \$1.76 a share. The year-ago net, if adjusted for changes in railroad depreciation which don’t require a formal restatement, would have resulted in a pro forma profit of \$138 million, or \$1.63 a share” [Wells, 1986, p. 1].

It appears from the article that even though the railroads were already reporting depreciation to the IRS, they were still leery of capricious ICC regulators and the market dynamics of the change. Those problems were now ending with the *de facto* deregulation of the industry. Regardless of the railroad's (and the ICC's) final opinion on RRB, the theoretical basis of the matching principle had won out after all. After 75 years of official sanction, and probably 150 years of industry usage, betterment accounting had met an ignominious end from the same bureaucratic organization that had defended it so long. With the ICC also relenting on the issue of deferred taxes in March 1983, railroad accounting finally came into harmonization with other U.S. industry practices.

THE LAST WORD

After nearly 30 years, Leonard Spacek's concerns pertaining to the "divergency" in railroad accounting principles could be put to rest. In the course of his arguments, however, he and his firm unknowingly put forth a set of principles that explained the need for the convergence of accounting standards based on clear accounting principles that would be theoretically sound, comparable between companies, transparent in their understanding, and useful for both managers and investors to use for decision making.

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EARLY COST ACCOUNTING PRACTICES AND PRIVATE OWNERSHIP: THE SILK FACTORY COMPANY OF PORTUGAL, 1745-1747

Abstract: This paper contributes to an understanding of the historical development of management accounting by presenting an example of cost accounting practice in Portugal in the first half of the 18th century. It explores the integration of cost and financial accounting systems within a double-entry accounting framework by the Silk Factory Company (SFC) between 1745 and 1747. The SFC's methods of product costing, pricing, inventory accounting, expense recognition, and production control are reviewed within the political, economic, and social context of Portugal at the time. The SFC is revealed to have used job-order product costing, with allocations of overhead costs, allowances for wastage and shrinkage, and elements of rudimentary standard costing. Our findings provide evidence of the existence of cost accounting and management control techniques at a private rather than a state-owned enterprise prior to the industrial revolution.

INTRODUCTION

This paper analyzes the management accounting system of one of the most important Portuguese manufacturing entities in the first half of the 18th century, the Silk Factory Company (*Companhia da Fábrica das Sedas*) (SFC), during its second administration, 1745-1747 [National Archives of Portugal (*Arquivos Nacionais da Torre do Tombo*) (ANTT hereafter), *Conselho da Fazenda, Decretos, maço*, 1699-1755; Neves, 1827, p. 41; Macedo,

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1982, p. 97].¹ The SFC had three administrations: the first from October 1734 to January 1745; the second, from February 1745 to October 1747; and the third, from November 1747 to May 1750. Upon its bankruptcy in May 1750, it became state-owned and known as the Royal Silk Factory (*Real Fábrica das Sedas*).

Although several books have survived from the first administration of the company, only the accounting records from its second administration are analyzed here because it is only then that the company used a double-entry bookkeeping (DEB) system. The relevant records – journal (*jornal*), ledger (*livro mestre*),² and inventory book (*inventário*) – were accessed at the ANTT. These records contain rich examples of cost accounting techniques, such as job-order costing with overhead cost allocation.

We have three general aims: first, to explain the cost accounting system of the SFC; second, to explore the accounting system of the SFC in the context of the ambient social, political, and economic context of Portugal; and, third, to contribute to an understanding of how and where management accounting techniques developed prior to the industrial revolution.³

Our exploration of the accounting system of the SFC reveals many useful insights to the development of management accounting practice. Such insights arise because the political, social, and economic context of Portugal during three years of the pre-industrial period, 1745-1747, is distinctive and under-explored in accounting history literature. The date of the accounting records analyzed is significant also because it precedes the first accounting book published in Portuguese, *Exact Merchant and his Books of Accounts* (*Mercador Exacto nos*

¹José Acúrsio das Neves, manager of the Royal Silk Factory from 1810-1821, wrote the administrative and economic history of the SFC. He described its foundation as an historic occasion because it was the most important of all factories in Portugal and because its charter contained the same principles adopted subsequently in the monopolist companies created by King D. José I (Joseph I). The only exception was the seventh paragraph of the charter which provided for the taxing of exports rather than imports.

²The ledger is accompanied by a small book containing an index of accounts (*Abecedário do Livro Mestre*) in alphabetical order.

³In explaining the SFC's cost accounting system, we do not focus, as did Macías [2002, p. 31], on exploring the role of a firm's capital structure on "the parameters and uses of cost accounting information."

seus Livros de Contas)] by João Baptista Bonavie in 1758⁴ and precedes the foundation of the Portuguese School of Commerce (*Aula do Comércio*) in Lisbon in 1759.⁵

We draw from a rich vein of under-explored archival material to provide fresh comparative counterpoints to the bulk of existing analyses of manufacturing accounting history which have been written from a predominantly Anglo-Saxon vantage point. We elicit information to sustain or refute existing conjectures about manufacturing accounting developments on the Iberian Peninsula. The results will be useful in evaluating the findings of many previous studies. Primary sources relied upon include several of the 1,115 accounting books written between 1734 and 1835 which are available in the ANTT. They are catalogued there under the name of the SFC's successor company, the Royal Silk Factory. Appendix 1 classifies this inventory and the 34 books accessible for the SFC's operations in the period 1734 to 1750.

Although manufacturing and industrial accounting has been studied in depth *after* the Industrial Revolution, there are fewer case studies of such accounting *before* the second half of the 19th century. This is consistent with the observations of Carmona [2004, 2005] that "accounting history research published in international journals focuses overwhelmingly on the narrow time segment of 1850-1940." According to Boyns et al. [1998, p. 398] and Boyns and Edwards [1997, p. 2], few cost accounting texts focus on industrial accounting practice before 1750, apart from Moschetti [1610],⁶ Monteage [1683], Collins [1697], North [1714], and Dodson [1750]. Few scholarly papers in the English language analyze cases of manufacturing accounting before the second half of the 19th century. The principal

⁴There is some dispute about the identity of the first Portuguese accounting book. Yamey [1969] and Bywater and Yamey [1982, p. 9] claim that the first such books were published in Portuguese by Bonavie (1758) and by an anonymous author (*Treatado Sobre as Partidas Dobradas por Meyo da Qual Podem Aprender a Arrumar as Contas nos Livros* (Treatise on Accounting Using Double-Entry Bookkeeping), 1764; and that both these books "correspond closely" with (plagiarize?) Barrême's book, *Traité des Parties Doubles* (Treatise on Double-Entry Bookkeeping), 1721.

⁵This school is alleged, in the Portuguese literature at least, to be the first government-sponsored school of commerce in the world. Four subjects were taught: arithmetic, algebra, and geometry; exchange, weights, and measures; insurance; and the DEB method [Rodrigues et al., 2003, 2004].

⁶According to Sá [1998, pp. 59-60], this is the first book dedicated to industrial accounting.

exceptions are papers with an Anglo-Saxon bias [e.g., Edwards, 1989; Fleischman and Parker, 1990, 1991; Edwards and Newell, 1991; Fleischman et al., 1995, 1996; Boyns and Edwards, 1997; Fleischman and Tyson, 1998] and papers focusing exclusively on examples from Spain [e.g., Carmona et al., 1997; Carmona and Macías, 2001; Carmona and Gómez, 2002; Carmona and Donoso, 2004; Gutiérrez et al., 2005; Martínez Guillén, 2005; Romero Fúnez, 2005] and those from Italy [e.g., Zan, 2004; Zambon and Zan, 2005]. Several papers in languages other than English [e.g., in French, by Nitikin, 1994] deal with cost accounting developments in other countries. There are some comparative studies [e.g., Boyns et al., 1998] of the similarities and differences in industrial accounting prior to 1880 between Britain and France. Carmona [2006] provides an instructive review of the history of management accounting in four European Latin countries: Spain, France, Italy, and Portugal.

We concur with Boyns and Edwards [2000], Hoskin and Macve [2000], Fleischman and Tyson [1998], and Fleischman et al. [1995], among others, that it is desirable to conduct further research into cost and management accounting history by examining business records in a wide variety of countries. We contend that Portugal should be one of the countries for which such further research is needed and likely to be insightful. In Carmona's [2006] review of management accounting history in four countries of Continental Europe, the focus is preponderantly on the histories of Spain and France, and to a lesser degree Italy, with only a brief mention of the development of management accounting in Portugal. Accordingly, this paper adds to extant literature by presenting, in English, an example of cost accounting practices, 1745-1747, in a privately owned, Portuguese, silk textiles manufacturing company. Analysis of the SFC's accounting system has the potential to enhance understanding because of the SFC's distinctive geo-political context, the time period, the SFC's private ownership, and the strong competition the company faced from imports and small firms.

We begin by discussing relevant previous literature on early cost and management accounting practices. Then we present a brief historical background of Portugal in the 18th century and a brief historical overview of the SFC. Thereafter, we outline the operation of the SFC's management accounting system, highlighting its distinctive features and formative influences. The final section discusses our findings and conclusions.

LITERATURE REVIEW

A growing body of research has concluded that sophisticated cost accounting techniques were used *before* the second half of the 19th century [see, for example, Gutiérrez et al., 2005]. This is contrary to some earlier management accounting historiography [see Fleischman and Parker, 1991, citing Solomons, 1952; Garner, 1954; Pollard, 1965; Kaplan, 1984]. Pollard [1965], for example, contended that high profit margins and the absence of competition provided little incentive for firms to adopt cost accounting during the British Industrial Revolution. However, Fleischman and Parker [1990, p. 220] have argued that some notable innovative cost accounting methods were used in the U.K. between 1760 and 1850. They cite the accounting practices of the Carron Company, a Scottish ironworks, in which the cost accounting processes “appear to have been motivated by the firm’s early problems with securing adequate partnership capital, attaining profitability, and maintaining liquidity.”

Carmona et al. [1997, p. 412] analyzed the cost accounting system used by a large, state-owned tobacco factory in Spain, the Royal Tobacco Factory of Seville (RTF). They argued that intense competition most likely stimulated cost calculations which could be used in a quest to improve firm efficiency and strengthen competitive position. Nonetheless, they contended that in the case of the RTF, linking the emergence of cost accounting purely to the logic of profits “yields only a partial explanation of the cost accounting phenomenon” and that the development of cost accounting practices at the RTF was part of a strong disciplinary regime⁷ which aimed to minimize opportunities for tobacco theft and facilitate the surveillance of factory labor. Cost accounting techniques assumed this disciplining role, prompted by the importance of tobacco revenue to the State Treasury. Because of problems in ensuring effective visual supervision, the cost accounting system calculated expected costs of direct labor and material consumption for each phase of the production process.

In a similar vein, Carmona and Donoso [2004] studied the role of cost accounting systems in enforcing public policy in early regulated (monopoly) markets at the Royal Soap Factory of Seville (RSF) (1525-1692). They found that a complex system of cost calculation had been the basis for price negotiations for

⁷Romero Fúnez [2005] develops this point by analyzing the regulations of the RTF. He concludes that the RTF’s accounting system contributed to a “spirit of discipline,” aimed at ensuring the behavior of individuals complied with requirements under the regulations.

many years and that centuries before the advent of scientific management in the late 19th century, the RSF's raw materials standards anticipated the introduction of standards based on expectations from prior results. Martínez Guillén [2005, p. 101] analyzed a memorandum authored by Antonio Bordázar de Artazu in 1732 (13 years before our analysis period), in which a costing model is presented for use in the Spanish printing industry. Bordázar's model is significant for two major reasons: first, it advocates cost-based retail price calculations in order to help challenge a monopoly within a strictly regulated market; and second, it includes "concepts such as the imputation of indirect costs, application of interest and the separation of direct and indirect wages. In addition, the retail price was determined as a multiple of the total cost of the books."

Gutiérrez et al. [2005] applied the model used by Fleischman and Parker [1991] and concluded that sophisticated cost accounting practices existed in Spain before 1800. The surveys of company practices by Fleischman and Parker [1991] and Gutiérrez et al. [2005], although differing considerably in terms of their political, institutional, and social contexts, both suggest the emergence of modern cost accounting after 1760. The survey of Spanish practices by Gutiérrez et al. [2005] was conducted predominantly in monopoly companies and in an environment of government (or crown) intervention. In contrast, the focus of Fleischman and Parker [1991] was on UK companies which were predominantly subject to private ownership and non-interventionist governments. Gutiérrez et al. [2005] contend that sophisticated costing emerged in Spain as the cumulative result of two sets of factors. First, there were *economic factors*. Because the textile industry was open to foreign and national competition, most managers required information for decision making because of the business complexities they faced. Second, there were *political factors*. Most factories analyzed were related closely to the crown. Gutiérrez et al. [2005] claim that the royal textile factories faced financial difficulties because of the high levels of capital investment they required, the need to integrate activities, high transport costs, and the lack of skilled workers. Such difficulties, especially the financial one, are argued plausibly to have prompted Spanish textile companies to monitor and control costs more closely and to use innovative accounting techniques [Carmona and Gómez, 2002, p. 237]. Of particular concern was the impact of fixed costs since the interest on debt was substantial and the salaries of accountants and managers were very high.

Fleischman et al. [1995] argue that firms focused initially on controlling raw materials, and then turned to the development of proper techniques to evaluate and assess production processes and operational performance. Using the accounts of the Royal Textile Mill of Guadalajara (RTM), 1717-1744, as a case study, Carmona and Gómez [2002] contend that the RTM's cost accounting techniques concentrated on control of raw materials and waste, control of labour and management, and allocation of overhead to determine product cost. However, because of the lack of expertise in textile manufacturing in Spain in the early 18th century, the state-owned RTM company hired experienced Dutch workers who received high fixed salaries. In this context, Carmona and Gómez [2002, p. 248] found that the "RTM deployed standards of control for labour either before, or contemporaneously with, the implementation of standard costs for raw materials." Their findings are inconsistent with those of Fleischman et al. [1995] who argue that because control of labor requires a higher degree of sophistication than control of raw materials, accounting controls for labor usually were developed *after* accounting controls for raw materials. However, as Carmona [2005] has noted, the evidence is mixed about whether standards for control of raw materials *preceded* those for labor. Some results [e.g., Zan, 2004; Zambon and Zan, 2005] are consistent with those of Fleischman et al. [1995], whereas other results show the *simultaneous* use of control standards for materials and labor [Carmona et al., 1997, 2002].

HISTORICAL BACKGROUND

The Political, Economic, and Social Context of Portugal: In the western world of the first half of the millennium, Italian city-states, such as Venice, dominated international commerce with the East. Their accounting was highly developed and their businessmen were well educated. However, in 1498, this dominance was put at risk by the discovery by Portugal's Vasco da Gama of the sea route to India, via the Cape of Good Hope. Portugal exploited this discovery. It gained trading advantages with Asia and maintained them for fifty years [see Peres, 1959; Godinho, 1962, 1981; Boxer, 1969; Livermore, 1976; Serrão, 1980]. Merchants from Italian city-states came to Lisbon seeking to profit from the Portuguese advantage, bringing with them knowledge of DEB techniques.

Portugal's influence as a colonizing nation flourished in the first decades of the 16th century but was soon eclipsed by

the rise of other major colonial powers. Portuguese affluence began to decline during the reign of King D. João III (John III) between 1521 and 1557. A major reason for this was the onset of the Portuguese Inquisition in 1531. This prompted a significant number of Portuguese Jews, who had played an important role in Portuguese discoveries, to leave the country [Kayserling, 1971; Livermore, 1976, p. 147; Tavares, 1995; Nogueira, 2001; Rodrigues et al., 2003; Rodrigues and Craig, 2004, p. 341]. The loss of influential merchants was accompanied also by the flight of much capital from Portugal and the depletion of the country's entrepreneurial skills [Marques, 1984; Rodrigues et al., 2003]. The Portuguese Inquisition was on-going and adversely affected many influential businessmen, progressively weakened the bourgeoisie, and helped lead Portugal to "abyss and ruin" [Kayserling, 1971, p. 284].

During the reign of King D. Pedro II (Peter II) (1668-1706), when Portugal was under the governorship of the Count of Ericeira, the country experienced economic difficulties. It attempted to develop industry by encouraging manufacturing activity. Throughout the country, factory systems were established to operate in concert with artisan workshops and a domestic cottage industry. Artisans required very little capital and low-priced equipment. However, with the transition to manufacturing, large sums of capital and a large workforce were needed. In 1677, King D. Pedro II authorized Rolando Duclos to establish a silk factory. A complex industrial entity with fifty silk looms and about one thousand workers was constructed [Macedo, 1982, p. 37]. A supporting infrastructure of medieval guilds developed around the factory. To help ensure a stable workforce, protection was given to the factory by the king. Factory workers could not terminate their employment unless other workers were available to replace them [Macedo, 1982, p. 251]. In the same way, the Bragança⁸ silk factory, which was in a state of decline at the time, was supported by the king who summoned experts and technicians from Toledo to teach silk producers appropriate techniques and methods [Sousa, 2005, p. 2].

During the first half of the 18th century, Portugal benefited from the flow of diamonds and gold from Brazil. The Portuguese court became one of the richest in Europe [Serrão, 1996]. Nevertheless, the economy was under-industrialized in comparison with other European nations [Marques, 1984; Maxwell, 1995].

⁸Bragança is located in Trás-Os-Montes, in Portugal's northeastern interior, bordering Spain.

After the death of the Count of Ericeira in 1690, interest in manufacturing declined, so much so that in the first quarter of the 18th century, silk manufacturing activity was conducted only in artisan workshops and in a “cottage system” [Macedo, 1982, p. 70].

The ideals of the Enlightenment, imported from France during the reign of King D. João V (John V) (1706-1750), spread slowly in Portugal. The king wanted to modernize Portugal and expand its power, but he had only limited success. The economy was under-industrialized and in decay. Attempts to industrialize were not pursued as vigorously as they had been, in part because it was easier to derive wealth from shipments of gold from Portugal’s colony in Brazil [Almeida, 1989-90, p. 1]. Portugal’s generous commercial treaties with England also were a disincentive to industrialization [Macedo, 1982].⁹

Applying the French model, D. João V sought to expand his power base and to modernize the country, thereby reinforcing an absolute monarchical regime in Portugal [Livermore, 1976; Marques, 1984]. Despite such political reforms, the strong conservatism, cultural backwardness, and religious intolerance of Portugal provided a weak base for the adoption of Enlightenment ideals [Fonseca, 2000]. The Inquisition, through its censorship of many books, helped suppress intellectual creativity and promoted hostility to innovation [Marques, 1984]. The Catholic Church was wealthy and dominated teaching, but it did not teach accounting. Rates of illiteracy were very high and the nobility did not value education or business [Azevedo, 1929; Rodrigues et al., 2003].

In the 1730s, interest in silk manufacturing activity was rekindled [Macedo, 1982, p. 72], but many problems had to be addressed. Administrators, for example, lacked management skills and knowledge of how to market manufactured products effectively [Macedo, 1982, p. 72]. Portugal began to imitate French mercantilism [Dias, 1984, pp. 142-150, 212-213]. Influenced by Colbert’s example in France, Cardeal da Mota, the prime minister of D. João V, supported the development of big to acquire the corporations operated by privileged bourgeoisie [Falcon, 2005]. He encouraged industry to acquire the skills of foreign artisans and craftsmen. A popular model for establishing a

⁹From 1661, Portugal had a political alliance with England. This was strengthened in 1703 with the Metween Treaty establishing special conditions, including a reduction in taxes, for the export of Portuguese wine to England. It also removed restrictions on the import of English textiles into Portugal.

manufacturing operation involved inviting a foreigner to initiate the project, and later to invite the participation of Portuguese partners. According to Macedo [1982, p. 72], the social and economic structure which supported Portugal's keenness to engage in manufacturing between 1720 and 1740 was characterized by "improvisation," insufficient capital, and lack of technical and administrative skills. The SFC was regarded as one of the most important activities of the new manufacturing era. It was the largest manufacturing company operating during the reign of D. João V [Almeida, 1989-90, p. 2]. Although there were only a few factories in Portugal at the time, there were many artisan workshops and many vestiges of a cottage industry system.

The accounting at the SFC, which we explore, was conducted in the transition from the cottage industry¹⁰ to the industrial revolution era. This transition period, which witnessed the initial uses of a factory system, is often described as the manufacturing era. To better understand the accounting at the SFC, in a footnote we provide a brief outline of the 18th century Portuguese systems of weight (*arrátel*), length (*côvado*), and currency (*real*).¹¹

Brief History of the SFC: The SFC was created in 1734 as a private company by the Frenchman Robert Godin, with financial support from wealthy backers and authorization from King D. João V. Godin received a charter on February 25, 1734¹² from the king, granting him many privileges, including monopoly rights to produce silk for 20 years (no further silk factories could be created without Godin's permission, para. 2 of the charter), tax exemptions for ten years from a wide variety of taxes (para. 6), no import tax on raw materials (paras. 7 and 8), exemptions of employees from military service (para. 6), and execution of

¹⁰This describes a system in which materials were put in an artisan's workshop or in a person's home to be transformed into products.

¹¹One *arrátel* was 459 grams or 16 *onças* (ounces). 32 *arráteis* (plural of *arrátel*) constituted one *arroba*. In this paper, we represent *arrátel* with the notation "a." A *côvado* was 0.66 meters and was written *C^{do}*. Percent was written as *pC*.

The monetary unit was a *real* (plural *réis*, and abbreviated to *rs.*). To indicate one thousand *réis*, a \$ was written, followed by three zeros. Thus, 2,000 *réis* was written as 2\$000. A million *réis* was written using a colon (:). Thus, 5,000,000 *réis* was 5:000\$000. Tables presented by Mata and Valério [1993, p. 279] help us to understand the relationship between *réis* in 1745 and their conversion into *euros* in 2000; approximately 25 *réis* in 1745 are equivalent to €1 in 2000. One thousand *réis* are equivalent to approximately €39, and one million *réis* to €39,000.

¹²Neves [1827] states that the original charter was destroyed in the 1755 Lisbon earthquake. A copy of the charter has survived.

the company's debts as royal debts (para. 20). However, the king insisted also that compulsory preference be given to Portuguese raw materials and labor (especially in the case of apprentices, para. 14); and that the factory be audited annually by the state (paras. 10, 11, and 12) [ANTT, *Ministério do Reino*, book 167, sheet 211; ANTT, *Cartórios Notariais de Lisboa, Cartório no. 11*, book 526, sheets 4-6 and 8V-9; Neves, 1827, pp. 25-40; Macedo, 1982, pp. 251-256].

Godin and his partners¹³ raised capital and formed a joint stock company. The company produced silk products trimmed with gold and silver, velvet, damasks, grogram, brocades, satins, taffetas, and gold and silver laces [Santos, 2002]. The SFC enticed expert designers and craftsmen to Portugal from France and commenced operations in a modest factory in Fonte Santana, where Godin lived. In 1738, the SFC established itself in a new and large factory in Rato, Lisbon, even though construction of the factory was not finished until 1741. In 1749, there were 100 assembled looms in the factory [ANTT, *Conselho de Guerra, Decretos, maço 258*; Neves, 1827; Santos, 2002].

The administrators of the company were elected by the partners. They supervised three main offices: general administration, sales administration, and accounting [ANTT, *Cartórios Notariais de Lisboa, Cartório no. 11*, book 526, sheets 4V-6V]. The directors of the first Administration were Manoel Nunes da Silva Tojal, Francisco Ferraz de Oliveira, and Domingos da Silva Vieira. After the death of Ferraz de Oliveira and Silva Vieira, Tojal was left as the sole administrator, but he acted with the advice of Manuel de Sande de Vasconcelos [ANTT, *Conselho da Guerra, Decretos, maço 258*]. The administrators were responsible for purchases, sales, payments, maintenance of the accounting books, and general decision making. Godin provided technical advice on the manufacturing operations [Almeida, 1989-90].

At the end of October 1734, the capital of the company was 16 million réis (40 shares of 400\$000 each). However, the capital needs increased quickly with the construction of the large

¹³They were: Manoel Nunes da Silva Tojal, Manoel de Sande de Vasconcelos, Francisco Xavier Ferraz de Oliveira, João de Castro Carneiro, Manoel da Costa Pinheiro, Domingos da Silva Vieira, D. Gabriel António Gomes, Christian Stockler, and Domingos da Cruz Lisboa. Godin did not subscribe any capital, but he was considered to be a partner who gave to the company his knowledge and "his intelligence and activity" [ANTT, *Cartórios Notariais de Lisboa, Cartório no. 11*, book 526, sheet V]. Godin received an annual salary of 480\$000. He received a smaller amount of dividends "because he did not deliver any capital" [ANTT, *Cartórios Notariais de Lisboa, Cartório no. 11*, book 526, sheet 6V].

factory at Rato between 1735 and 1741 [Neves, 1827]. By May 1742, capital had risen to approximately 61.2 million réis (153 shares) [partners' share register book (*entrada de sócios*) no. 980].¹⁴ Soon the company's capital needs were such that it had to borrow money, repayable with interest.

In addition to the manufacturing plant, the building had six retail shops. There were several offices housing the commercial staff (a merchant specializing in sewing silk, a merchant specializing in wool and silk, a general director of sales, a clerk and a director of production) and the directors of the company. Several employees of the company lived in the same building (the bookkeeper, the clerk, and the doorkeeper). The SFC's staff also included silk weavers, silk manufacturers, foremen, designers,¹⁵ sock makers, lace makers, dyers, a storekeeper, blacksmiths, carpenters, two cooks, a water carrier, a doctor, and a nurse [Macedo, 1982]. In 1749, "the factory employed 200 men (specialized workers and artisans) and approximately one thousand female silk winders. The factory also contracted many silk throwers, gold and silver drawers, carpenters, turners, joiners and blacksmiths" [ANTT, *Conselho de Guerra, Decretos, maço* 258]. Many of the specialized foreign workers were French [Almeida, 1989-90].

On July 3, 1745, the cashier and administrator of the SFC, Manuel Nunes da Silva Tojal, was advised by the government auditor that the company had sustained a very sizable operating loss of 18:796\$990 from its inception through to August 1744 [ANTT, *Conselho da Fazenda, Maço, Decretos, 1725 e anos seguintes*]. The company's capital had been exhausted by the construction of the new factory in Rato. A memorial written by Godin on September 1, 1749 revealed that the first administration had expended 31:037\$875 réis building the new factory. In the period, salaries and gratuities totalling 32:644\$800 réis were paid as well [ANTT, *Conselho da Guerra, Decretos, maço* 258]. Manufacturing was undertaken in the face of strong external competition from legal imports and contraband products [Macedo, 1982, p. 72; Pedreira, 1994, p. 40], and the SFC was not profitable.

¹⁴This amount corresponds to 1.2% of the large amount received in gold from Brazil in 1745 (about 5,200 million réis) [Mauro, 1991, p. 247]. Besides the capital subscription, the partners loaned the company 21:000\$000, bringing the total amount delivered by the partners to 82:200\$00 (ANTT, *Conselho da Guerra, Decretos, maço* 258). That amount corresponds to 1.6% of the amount received in gold from Brazil in 1745.

¹⁵The first designer was a Frenchman, Mr. Alezon [Santos, 2002].

To help ease the difficult trading situation faced by the SFC, the *Companhia da China* (China Company) was created in June 1741. It was granted privileges in the commercial traffic with Macau for a period of 16 years.¹⁶ The charter of 1741 suggested that this company “would improve both companies, consolidated in only one” [ANTT, *Chancellaria de D. João V*, book 102, sheets 270V-272V]. The objective was to help the SFC obtain silk foliage which was much cheaper in Macau than in Europe [Almeida, 1989-90, p. 7]. The elected administrators (Christian Stockler, Manuel Passos Dias, Rodrigo de Sande de Vasconcelos, and Manoel Nunes da Silva Tojal) prepared the statutes of the new company, whose capitalization was open to public subscription. The close relationship between commercial and industrial activities created hope that the prosperity of commerce would extend to the manufacturing sector [Almeida, 1989-90].

On July 4, 1745, Godin requested that the king extend these privileges for a further ten years. Godin argued that the partners had not benefited from their investment in such a “fantastic factory, one of the biggest of its type, which has become of public interest not only because of the silks produced but also because of the many craftsmen employed” [ANTT, *Conselho da Fazenda, Maço, Decretos, 1725 e seguintes*]. However, neither the granting of the extension of the privileges for a further ten years nor the stopping of major expenses related to the building construction was sufficient to help the company recover its poor financial situation [Macedo, 1982, p. 71; Pedreira, 1994, p. 40]. The SFC’s financial deficit made it impossible to take advantage of the industrial and commercial privileges it had received [Macedo, 1982].

The second administration was conducted by Manoel de Sande Vasconcelos, Christian Stockler, and Manoel Nunes da Silva Tojal. Christian Stockler was a consul who represented the City of Hamburg in Lisbon. There were serious disagreements between Godin and Stockler [ANTT, *Conselho da Guerra, Decretos, maço 258*; Almeida, 1989-90]. Godin accused Stockler of incompatibility on the grounds that it would be impossible to promote the commercial interests of Portugal and Hamburg at the same time [ANTT, *Conselho de Guerra, Decretos, maço 258*]. It seems that the SFC’s financial problems were compounded by personality differences and discipline problems [Almeida, 1989-90]. Al-

¹⁶However, since the company was in a difficult financial situation, the number of ships per year never exceeded one [Macedo, 1982].

though Stockler was replaced¹⁷ in the third administration, the company failed in 1750. The cause was attributed to the high costs of property and of training personnel [Neves, 1827]. This was not surprising in view of the criticism by Sebastião José de Carvalho e Melo,¹⁸ better known as the Marquis of Pombal, of the strategy the company had adopted. In a letter written from London to Marco António de Azevedo Coutinho, the secretary of state for war and foreign affairs to King D. João V, Pombal noted that unlike the big and expensive factory the SFC had just constructed in Rato, in London he could see only small and cheap factories [Macedo, 1982; Barreto, 1986]. Pombal [1741a] contended that companies should be small and cheap to make it easier for them to be profitable. Pombal, who was later foreign affairs minister (1750-1755) and chief minister (1756-1777) in the Portuguese government, had a very influential impact on Portuguese economic thinking of the time [Rodrigues and Craig, 2004, pp. 333-337].¹⁹ It was under Pombal's leadership that the SFC was transformed into the Royal Silk Factory, a state-owned enterprise.

ACCOUNTING SYSTEM OF THE SFC

The SFC factory was surrounded by houses in which strands of raw silk were produced from silk cocoons. They were then passed to the factory for processing into finished silk products. The production cycle was:

silk filament → *raw silk thread* → *dyed silk* →
reeled silk → *silk fabrics* → *finished silk clothes*

An integrated accounting system using DEB and job-order costing computed full costs of units produced. It was allied with

¹⁷The third administration was conducted by Rodrigo de Sande de Vasconcelos, Manoel Nunes da Silva Tojal, and Francisco Ferreira da Silva.

¹⁸He acquired the title, Marquis of Pombal, in 1769. In 1741, he was the ambassador of the Portuguese King D. João V to the English Court of King George II. In this letter, Pombal advised the King that in England the small manufacturing operations he observed there were not experiencing the same financial problems as were being experienced in Portugal because the English firms did not have the same structure and amount of costs. Pombal stated that the value of the building where the Silk Company was established was greater than all the similar companies established in London and surrounding regions [Pombal, 1741a].

¹⁹Pombal's "Report on Grievances" to the king of Portugal in 1741 is regarded by many, such as Barreto [1986], to be one of the most important expressions of Portuguese economic thought in the first half of the 18th century.

a charge and discharge system of accounting in which administrators and artisans were each accountable for the materials disbursed to them. The quality of production was controlled and the cost per *côvado* was computed. Artisans were discharged from responsibility for raw materials when they forwarded finished products. Stocks were valued at an average estimated cost. Expense control was achieved by comparing the variance between allocated costs and actual costs. Administrators were responsible for controlling expenses, rendering accounts, and paying creditors. The central account was a "finished goods" account (*fazendas em ser na mão da administração da venda das fazendas da fábrica*; literally, "finished fabrics held by the sales administration").

Cost Calculation and the Finished Goods Account: The computed cost of each job was entered in the factory invoices book (*livro de facturas da fábrica*). For the first job order, direct costs were 71\$540 réis and indirect costs were 15\$022 réis, with total costs of 86\$562 réis. The output was 66½ *côvados* so that the unit cost was approximately 1\$301 réis per *côvado*. During February 1745, 20 job orders were completed, comprising 1323.25 *côvados*, or approximately 873 meters of silk, at a total cost of réis 2:776\$272. Job number 1, the first of 20 pieces completed on February 28, 1745, is recorded in the "account of cost" as follows [ANTT, book no. 676, p. 1]:

FIGURE 1

Job-Order Cost Sheet, SFC, February 28, 1745

No. 1 1st Piece -66 1/2 *côvados* of brilliant grey colour produced by Loom no. 76 by Vicente Febregat

a	9 " 15 "	weight of the piece [9 arratéis and 15 ounces]	
a	- " 10 "	loss	
a	10 " 9 "	of dyed silk @ 4000 réis.	rs. 42\$250
	salary of the artisan and foremen	@ 260 rs. per C. ^{do} [by <i>côvado</i>]	" 17\$290
	salary of the apprentice @ 150 rs.	by C. ^{do}	" 9\$900
	Silk reeling @ 200 rs. per a	[by arrátel]	" <u>2\$100</u>
			" 71\$540
	interest @ 6 p C. ¹		" 4\$292
	general factory expenses @ 3 p C. ¹		" 2\$146
	wages @ 6 p C. ¹		" 4\$292
	letting of the house and looms @ 6 p C. ¹		" <u>4\$292</u>
			" <u>86\$562</u>

We have 66 1/2 C.^{do}s. The cost per *côvado* is 1\$301 réis and the remainder is 45½ réis.

Full cost per *côvado* was defined in a fashion similar to the French *prix de revient*, the total cost accounting system that Nikitin [1990] found at Saint-Gobain between 1820 and 1880 and that Bordázar proposed in the Spanish printing industry in 1732 [Martínez Guillén, 2005]. As with Bordázar's proposal, there is an indirect imputation of costs and a separation between wages of workers directly involved with silk production and those who were not. *Estimated* overheads were applied in a consistent fashion as a set percentage of direct costs. Indirect wages, interest, and costs of "letting of the house and looms" were allocated at 6% of total direct costs, and general factory expenses at 3%. Because the SFC had obtained a charter with monopoly rights, managers believed that the fair sales price could be calculated by adding the "cost price" and a fair profit.²⁰ Accordingly, calculation of the "cost price" (full cost of products) was most important. Note that at the RTM of Guadalajara in 1742, indirect salaries of "the superintendent and the personnel employed in the accounting and cash offices and in the warehouses" were allocated (at the rate of one-eighth of their yearly wages) to the cost of the white twill [Carmona and Gómez, 2002, p. 246]. It is also relevant to note that in the costing model proposed by Bordázar in 1732 [Martínez Guillén, 2005], cost was increased by 5% per year to reflect the financial interest costs likely to be incurred in storing finished goods (books) for several years. In the case of the SFC, the imputation of interest costs arose because the company had to borrow a large sum of money to construct the new factory in Rato.

The integration of cost accounting and financial accounting can be seen in the journal and ledger. For instance, at the end of February, the following entry was recorded in the journal [ANTT, book no. 720, pp. 13-14]:

DR.	Finished Goods	2:776\$272
CR.	Creditors ²¹	2:776\$272

During the month of February, 20 pieces of silk were produced by the looms and were delivered to the Administration:

²⁰This reasoning was wrong since, as Sousa [2005] argues, the silk industry was the most important sector of Trás-os-Montes. Records show that in 1721-1724, Bragança had 30 registered spinning wheels and 350 looms. Freixo de Espada à Cinta, another city in the region, had more than 100 looms.

²¹"Creditors" here means all costs that contribute to the finished goods.

FIGURE 2
Items Transferred to Finished Goods Inventory, SFC,
February 1745

1 st Piece – 66 1/2 côvados of brilliant grey colour	86\$562
2 nd Piece – 46 1/2 côvados of black and silver program	157\$344
3 rd Piece – 74 côvados of black <i>Grodetur</i>	98\$701
4 th Piece – 100 côvados of black <i>Grodetur</i>	135\$713
5 th Piece – 45 1/4 côvados of white and gold program	187\$755
6 th Piece – 80 côvados of black skirt	144\$728
7 th Piece – 44 3/4 côvados of purple and gold satin	340\$314
<u>(7 pieces – 457 côvados)</u>	<u>1:151\$117</u>
(next page)	
<u>(7 pieces – 457 côvados)</u>	<u>1:151\$117</u>
8 th Piece – 45 1/4 côvados of purple and gold satin	349\$374
9 th Piece – 94 côvados of mantles	82\$103
10 th Piece – 92 côvados of white serge	58\$170
11 th Piece – 99 1/2 côvados of mantles	84\$268
12 th Piece – 89 côvados of black <i>Nobreza</i>	64\$363
13 th Piece – 45 1/2 côvados of green program	96\$025
14 th Piece – 48 côvados of blue <i>Persiana</i>	68\$216
15 th Piece – 45 1/2 côvados of silver program	263\$422
16 th Piece – 68 1/2 côvados of black program	81\$535
17 th Piece – 66 côvados of brilliant gold colour	70\$336
18 th Piece – 36 côvados of white and gold damask	191\$134
19 th Piece – 92 côvados of brilliant cinnamon-colour	118\$039
20 th Piece – 48 côvados of black skirts	<u>98\$180</u>
<u>20 pieces – 1323 1/4 côvados</u>	<u>2:776\$272</u>
Dyed silks of 20 pieces	935\$875
Expenses of artisans and foremen of 20 pieces	444\$205
Expenses of apprentices of 20 pieces	230\$509
Silk reeling	46\$294
Interests	137\$684
Factory general expenses	68\$337
Wages	137\$684
Letting the house, factory and looms	<u>137\$684</u>
	2:138\$272
Gold, silver strand	<u>638\$000</u>
	2:776\$272

The double-entry system facilitated computation of the value of finished goods at the end of the period (2:776\$272). Such a value was computed using information in the account that recorded the cost of each job order. For example, the cost of the first piece (86\$562) was the first debit in the finished goods account. This sum was obtained from the invoice book, the book of cost account. Such a treatment provides evidence of the integration of the SFC's cost and financial accounting systems. The SFC's

integration of costing procedures into its double-entry accounting system, like such systems elsewhere, had the potential to give “managers improved control over operations” [Edwards and Newell, 1991, p. 48]. This was because there was less chance of omitting costs within the more secure double-entry accounting framework. All transactions which supported the costing of products were recorded. The SFC provides evidence additional to that gathered for the coal, iron, and steel industries to show that the “two branches into which accounting is today conventionally categorized – financial and costing – rather than developing from separate beginnings, as was previously believed, in certain industries at least grew naturally out of a single system” (Boyns and Edwards, 1997, p. 20). At the SFC, costing information was provided jointly with important information about products.

During the SFC’s second administration, there were 663 job orders for silk products and monthly orders for silk stockings. Product costs were determined as full costs, using a job-order costing system. Each job order included, as direct costs, dyed silk at an estimated cost based on weight (including a shrinkage loss), salaries of artisans and foremen (paid by piece), salaries of apprentices (paid by piece), and silk reeling (paid by weight unit). Indirect costs were comprised of interest (6% of direct costs), factory general expenses and indirect materials (3% of direct cost), indirect labor wages (6% of direct cost), and rent on the house, factory, and looms (6% of direct cost).

Materials were valued at an estimated average cost, a rudimentary form of standard cost. A particularly interesting feature of line 2 of the job cost sheet for Job No. 1 is that the weight of materials included an allowance of approximately 6% (10 ounces) for losses due to spoilage and shrinkage. The recognition of materials wastage was observed also by Zan [2004] in managerial and accounting discourse at the Venice Arsenal, and by Carmona and Gómez [2002] at the RTM of Guadalajara. Artisans, foremen, and apprentices were paid by piece rate. Manufacturing overheads, interest, non-manufacturing wages, and building and equipment repair were included at a pre-determined percentage of direct costs. The SFC was also one of the early entities to include interest in the identification of costs, as was the case with the Essex textile manufacturer, Thomas Griggs, 1742-1760, noted by Edwards [1989].

Further, as with other firms noted by Edwards and Newell [1991], the SFC was aware of the imperative to recoup all its costs. This provided an incentive to control costs, particularly

during periods when market conditions squeezed profit levels. Total costs were expressed as averages, in cost units of “cost per *covâdo*.” (See Figure 1 where the unit cost of job order no. 1 was approximately 1\$301 réis per *covâdo*.) Such averages would have been useful for control and efficiency assessment since these “units could be compared over time to provide indicators of changes in production costs of the pieces of silk and compared with the market price” [Edwards and Newell, 1991, p. 46]. The SFC had some controls over material usage, as we explain later. Although it was possible to exercise some control over payments made to each artisan and foreman, control of labor efficiency seems to have been lacking because foremen and artisans were paid according to the amount of production they completed.

Overheads were calculated as a percentage of direct costs as outlined earlier. But, as Gutiérrez et al. [2005, p. 131] note, “different foundations” for overhead allocation were used in the management accounting systems of the 13 large and medium-sized 18th century Spanish companies they examined. The “storage costs” of the Royal Textile Factory of Ezcaray were allocated on a flat rate of seven *reales* per unit and “damages and contingencies” at 1.5% of production costs. The notion of “ability to bear” was an instrumental determinant of overhead allocation because “baling cost and the managers’ and accountants’ wages were allocated at a different rate for each type of fabric depending on its class – *allowing higher rates for higher quality fabrics*” (emphasis added).

The fact that the cost of each job order was computed in the “invoice book” leads to the belief that a major objective of product costing at the SFC was to compute selling price. Although the SFC had been granted monopoly rights by the government to produce silk in Portugal, it suffered strong competition from small and big factories which were in operation when the SFC was created. The competition between the SFC and the companies from Trás-os-Montes is recognized by Sousa [2005, p. 3] who argues that “the second industrial boom (1720-1740), during the reign of D. João V, did not seem to have any positive impact on the revival of the Trás-os-Montes silk industry. On the contrary, the establishment of the Rato silk factory in Lisbon led to a fall in the demand for silk fabrics from Trás-os-Montes.” Most importantly, national silk fabrics were subject to competition from untaxed imported goods. King D. João V’s government adopted a policy of taxing silk exports but allowing silk imports to remain tax-free. This arrangement made export and national sales very difficult for the SFC to achieve. “This was a

fatal mistake for agriculture and even more for manufacturing. Later, all developed nations, as did our King D. José I, adopted the opposite policy of facilitating exports and shutting out imports” [Neves, 1827, p. 41]. To suggest that the SFC determined its own prices would be an over-simplification because prices for silk and silk products were influenced by market forces and governmental economic policy. Selling prices were not a function of cost plus a mark-up, but could vary. This can be seen by comparing sales prices and full costs by job order (in *réis*) in the following examples [ANTT, comparison of books 676 and 978]:

FIGURE 3
Job Cost/Sales Price Comparisons, 1745, SFC

Job No.	Total Cost	Sales Price	(Loss)
10	631	620	(11)
18	5\$309	5\$200	(109)
29	1\$988	1\$800	(188)
35	1\$030	960	(70)
40	1\$403	1\$300	(103)

This comparison suggests that there were difficulties in selling finished product. Indeed, the company’s sales were low in comparison to its level of production. As with the textiles factories in Ezcaray and Guadalajara [Gutiérrez et al., 2005, p. 136], the SFC had trouble selling its products in the market. Its costs were higher than the prevailing sales prices.

Other Important Accounts: The account “administration of fabric sales” (*administração das vendas das fazendas da fabrica*) was a partial profit and loss summary account [ANTT, book no. 978]. Sales of silk fabrics were credited to this account, and the full applied cost of goods sold debited, with an amount transferred from the finished goods account. The resulting balance, representing the *expected* trading surplus for the period, was transferred to the profit and loss account. The *actual* profit would have differed from this *expected* profit if, as was usual, there were differences between actual costs and applied costs. The profit and loss statement served mainly as “a weeding-out process, in which the detailed and unwanted information in the ledger was removed” [Yamey, 1977, p. 23].

Two other important accounts were “dyed silks” (*sedas tintas*) and “general factory expenses” (*gastos gerais da fabrica*) [ANTT, ledger, book 718]. The dyed silks account was credited with the estimated costs to produce dyed silk and debited with

the actual costs incurred. The difference was transferred to the profit and loss account. "Dyed silks" was also an account on the balance sheet that was debited with the opening stock and credited with closing stock when charging the new administration. The "general factory expense" account was credited with applied cost and debited with actual cost; it was also a balance sheet debit account. The *actual* profit would have differed from this expected profit if, as would be usual, there were differences between actual costs, including actual overhead costs, and the applied costs, including applied overhead costs.

As Nikitin [1994] found in the cost accounting at the Forges D'Oberbrück Company (1738-1745), the cost accounting system revolved around the inventory accounts. However, at the SFC, the cost system was more sophisticated. The cost accounts and finished goods account were debited with the actual costs and credited with estimated costs. The differences were transferred to the profit account. The balance of the account "administration of fabric sales" showed the difference between sales and total estimated cost. The profit and loss account was composed of this value and the differences between actual and estimated costs. As with Bordázar's cost accounting model [Martínez Guillén, 2005], the profit and loss statement did not include depreciation expense. Whenever a fixed asset had to be repaired, the cost was simply booked as an expense against the period.

Charge and Discharge System and DEB: In the transition from the first to the second administration, the company's accounting system was a mixture of agency bookkeeping or "charge and discharge" accounting and a system of double-entry accounting incorporating several costing procedures. The main characteristic of agency bookkeeping "is that the party reporting would charge himself with the values he became responsible for and discharge himself in the records for every release from responsibility regardless of the cause" [Littleton, 1933, p. 2]. Agency bookkeeping systems were more common before the arrival of the Italian method of DEB. They were gradually abandoned around the middle of the 18th century when the transition from charge and discharge accounting to double-entry accounting, and the integration of the two systems, gained momentum [Jones, 1985, p. 41]. Administrators at the SFC, particularly the cashier, Manoel Nunes da Silva Tojal, were responsible to promoters of the company for the capital resources placed in their hands. They were charged with these resources at the beginning of their administration [ANTT, book 718, pp. 4-8] and discharged at the end

[ANTT, book 720, pp. 192-197], as the opening page of the journal book (*jornal*) shows clearly. The inventory at the beginning of a new administration was important. It helped to establish what was owned by the company, what it owed creditors, and what its administration was accountable for. The words at the top of the inventory account state explicitly “this is the inventory delivered by the former administration to the new administrators Mssrs. Manoel de Sande Vasconcelos, Christian Stockler, and Manoel Nunes da Silva Tojal who will be obliged to pay to creditors, not only the capital but also the interest from now on and these are the *effects*²² [assets] that are being received.” The February 1, 1745 inventory appears as Figure 4 [ANTT, book no. 718, pp. 4-8].

FIGURE 4
Inventory, February 1, 1745, SFC

Dyed silks	6:655\$062
Raw silks	4:712\$606
Silks in foliage	277\$750
Raw silk strand	168\$187
Dyed silk strand	25\$510
<i>Alducar</i> for borders	8\$276
<i>Possolos</i> and waste	108\$021
Gold and silver strand	3:213\$634
General factory expenses	339\$000
Soap	112\$761
Clothes awaiting shipment to Macao to Belchior Araújo Costa & C ^a	3:880\$580
Finished clothes	9:259\$362
João José del Rey (debtor)	1:872\$000
Pedro Villela (debtor)	252\$000
Rev (Priest) José Oliveira da Patriarcal (debtor)	685\$903
Francisco Sparsa Tintoreiro (dyer)	139\$873
	<u>31:710\$525</u>
less what we owe to Mr. Manuel Nunes Silva Tojal by his disbursement	– 12:800\$000
	<u>18:910\$525</u>

payment of the above 18:910\$525 is to be made by this administration to the following creditors:

Dean of the Patriarcal Holy Church	6:000\$000
Eugénia Marianna Gonzaga	600\$000
Mother Abbess and other religious persons, Monastery of St. Marta	1:350\$000
Mother Abbess and other religious persons, Monastery of the Mother of God, Guimarães (...)	4:800\$000
Patricio Pires Quaresma	4:800\$000
Rev. Priest Luís Gonzaga of Companhia de Jesus by the hand of Manoel de Sande e Vasconcelos	1:000\$000
Rev. Priest José Dias of the Oratório Congregation	<u>365\$525</u>
	18:910\$525

²²Nikitin [1990] found the same word used to refer the inventory value of all assets of the Saint-Gobain Company.

The company's inventory account of 31:710\$525 was comprised of inventories of direct and indirect materials, finished goods, and amounts owing from customers. This inventory had been financed through the deposit of 12:800\$000 by the cashier and through loans of 18:910\$525, principally from the Church. It was necessary to resort to such loans to overcome the lack of capital and to help meet the high costs of building the factory and houses. Therefore, the sum of the charge (31:710\$525) exceeded that of the discharge (18:910\$525) and measured the indebtedness of the new administration to the cashier, Manoel Nunes da Silva Tojal. From reading the Cash Account in the ledger, we can ascertain that the cashier deposited 12:800\$000 on February 1, 1745 and received it back on February 28, 1745.

As Lemarchand [1994] points out, the charge and discharge model depended on the separation between capital ownership and management, centered on notions of responsibility accounting, and resembled certain aspects observed in early joint-stock companies. However, it seems that the inability of the single-entry bookkeeping system to cope fully with the complexity of the SFC became evident in the first administration, prompting it to adopt a DEB system in its second administration. As Macedo [1982] argues, this period is characterized by "improvisation" in terms of managerial activities. This change can be understood in a context where DEB began to be seen in Portugal as a system of rational beliefs²³ through which organizational structure is legitimized. As already noted, on July 3, 1745 the government auditor presented his report dated August 31, 1744. He concluded that the losses were a consequence of the large amount of interest the company was paying on the substantial loans it had obtained to finance construction of the factory buildings [ANTT, *Conselho da Fazenda, Maços, Decretos, 1725 e anos seguintes*]. The prospect of changing to an accounting system which facilitated the control of interest costs by charging them to the cost of the products would probably have been appealing.

Salaries and Wages: As with the RTM in Spain [Carmona and Gómez, 2002, p. 233], Portugal had to hire foreign workers to provide technical skills in production and accounting. The salaries paid were very high as the wages for the three months to March 1745, shown below, reveal [ANTT, book no. 720]:

²³The system of rational beliefs is evident in Pombal's [1741b] treatise in which he concludes that the DEB system was being used successfully by merchants in London.

Roberto Godin, factory manager	120\$000	
Nicolao Julio Cortinovis, bookkeeper	50\$000	
Carlos Roland, silk printer	75\$000	
João G. Rebelo	45\$000	
Bento Ferreira, Roberto Godin's keeper (February/March)	12\$000	
Matias Patrão, factory porter	<u>7\$200</u>	309\$200

By the end of the second administration (1747), the salary of the bookkeeper (Cortinovis,²⁴ effectively the SFC's accountant) increased from 50\$000 to 75\$000 for a three month period. The best paid workers, Godin (the factory manager), Cortinovis, and Roland (a silk printer), had foreign names.

Balance Sheet: The balance sheet was very different from its equivalents today; it did not include capital, fixed assets, or depreciation. The accounting system was based on debits and credits not on assets and liabilities. This made it difficult to calculate the net worth of the company. But this did not seem to bother the proprietors of the SFC who were concerned principally with controlling agency relationships. Figure 5 is the October 31, 1747 balance sheet [ANTT, book no. 720]:

FIGURE 5

Balance Sheet, SFC, October 31, 1747

<i>Débito</i> (Debit)	
Shag and raw silks	9:154\$210
Raw silks in foliage	650\$725
Raw <i>alducar</i> for border	27\$312
Raw silk strand	178\$509
Dyed silks	10:322\$525
Colour dyed <i>alducar</i>	5\$550
Colour dyed muzzle	15\$875
Silk wastes	147\$004
Gold and silver strand	1:903\$132
Factory general expenses	413\$530
Dye	599\$095
Soap for silk baking	64\$550
Silk samples	60\$375

²⁴Lourenço Cortinovis was from Venice and was the nominated consul of Portugal in Venice in 1720 [ANTT, *Registo Geral de Mercês, D. João V*, book 84, sheet 117-V]. Our conjecture is that Nicolao Cortinovis was a relative, but we could not find evidence to substantiate this. The earthquake Lisbon sustained in 1755 destroyed documents dealing with foreign affairs matters.

Finished clothes held by sales administration	43:870\$418
[silk retail	42:208\$726
stocking pairs	1:661\$692]
Shipment to Macao held by Caetano da Silva & Co.	2:087\$050
Patriarchal Holy Church and for the Reverend Abbot José Oliveira	83\$653
Cardinal of Motta (Prime Minister)	21\$600
Maurício Henrique and João Andrade Dias	2:322\$595
António Fragozo (debt of the Princes)	151\$250
António José, artisan of this factory	6\$325
Francisco Duarte, artisan of this factory	6\$000
Cash	<u>4:238\$191</u>
	76:329\$474

Crédito (Credit)

Monsignor Mattos	1:600\$000
Dean of the Patriarchal Holy Church	6:000\$000
Eugénia Marianna Gonzaga	600\$000
Rev. Priest Luís Gonzaga of Companhia de Jesus	1:000\$000
Mother Abbess and other religious persons, Convent of Saint Apolónia	2:500\$000
Marcos António de Araújo Coutinho	400\$000
Jozé Rebello Palhares	4:000\$000
Macao Company	17:000\$000
Ana Dorotheia de Sande Vasconcelos	30:540\$700
Maria Custódia do Sacramento and her religious sisters in the Monastery of Saint Marta	1:350\$000
Mother Abbess and other religious persons of the Monastery of God Mother of Guimarães	4:800\$000
Patrício Pires Quaresma	<u>4:800\$000</u>
	74:590\$700
Profit and Loss	<u>1:738\$774</u>
	76:329\$474

The balance sheet was concerned with chargeable values that needed closer control, so fixed assets and capital accounts were not included. Measuring the value of the company was not important.

The debits appear to comprise cash and amounts paid in respect of inventories (direct materials, indirect materials, finished goods in store, finished goods in transit), advances for wages of artisans, and amounts owing from customers and other debtors. Most of the credits comprise amounts owing on capital loans to the Catholic Church which, in this period, was acting as a bank. The excess of the debits over the credits was regarded as profit.

The financial situation of the SFC reveals total indebtedness of 74:590\$700. A large amount of the assets (43:870\$418 of 76:329\$474) was represented by finished goods inventory. There was also an imbalance between inventories of raw materials and goods in process (22:981\$858 or 30.1% of total assets) and

inventories of finished goods (57.5% of total assets). The SFC appears to have been suffering from overproduction and poor marketing.

DISCUSSION

In the SFC's second administration, administrators were faced with a challenging socio-economic climate. Their response, which included enhancements to the SFC's accounting system, offers support to "Fleischman and Parker's hypothesis that accounting innovations were often the product of perceptive businessmen struggling with real problems" [Boyns and Edwards, 1995, p. 48].

Further, the SFC's adoption of more elaborate calculative routines might be conceived as reflecting "specific rationales and ideals of order which the state valued and sought for the governance of society" [Bhimani, 1994, p. 407]. The French mercantilist ideas that were spreading in Portugal prompted the development of industry and state control. The SFC had been granted privileges, monopoly rights and some tax exemptions, from the state, and was to be audited by a government auditor. Because of this, the accounting system of the SFC might be perceived as "enrolled in certain pursuits of the state and as assuming 'its place alongside other practices of Government'" [Bhimani, 1994, p. 407]. King D. João V and Prime Minister Cardeal da Mota wanted to add to the power and independence of Portugal, and attempted to do this by embracing the ideals of French mercantilism, particularly Colbert's ideas. This required the SFC to institute an efficient and modern system of book-keeping which would allow good control and oversight of operations. The calculative routines used by the SFC were capable of improving the company's control of operations, and accorded with the state-sponsored mercantilist ethic of the time.

The development of several of the cost accounting practices evident at the SFC is often attributed to the factory system of the industrial revolution [Littleton, 1933; Johnson, 1981]. The accounting system observed at the SFC, 1745-1747, is consistent with Garner's [1954] argument that the initial impetus for the development of cost accounting was to replace the domestic system of production with the capitalist processes of production, and that the British Industrial Revolution (1760-1830) was not the main stimulus for change but merely accelerated the pace of pre-existing change.

The SFC's accounting system is noteworthy also because

it integrated the cost and financial records in a DEB system that included elements of a charge and discharge accounting (or agency bookkeeping) system. The SFC operated a job-order costing system that allocated overhead costs to products, allowed for direct materials shrinkage, and included interest cost as an indirect product cost. Elements of a rudimentary standard raw material costing system were evident. The SFC's balance sheet did not include fixed assets, accumulated depreciation, or a statement of owners' equity. The profit and loss account included interest costs but not depreciation expense.

The cost and management accounting practices used by the SFC support the contention [e.g., by Fleischman and Parker, 1990, 1991; Edwards and Newell, 1991; Boyns and Edwards, 1997] that many of the cost and management accounting procedures used today had origins and exemplars prior to the British Industrial Revolution, particularly in the first half of the 18th century. The SFC's cost accounting practices are also consistent broadly with case descriptions of the accounting systems that were used in Spain in the first half of the 18th century [Carmona et al., 1997; Carmona and Gómez, 2002; Gutiérrez et al., 2005].

The example of the accounting system at the SFC adds weight to the contention that the development of management accounting was a response to multiple influences, and that it ought not to be explained in terms of any *single* variable alone, such as the level of industrialization, the relative impact of fixed and variable costs, or the organizational structure of business activity [Edwards, 1989; Edwards and Newell, 1991]. The cost and management practices of the SFC are a rich source for further enquiry. The inventory of 34 accounting books of the SFC, listed in Appendix 1, are an under-explored archival resource that merits closer enquiry by scholars fluent in the Portuguese language. Such enquiry might explore the transformation of the SFC into a state-owned company in the 1750s under the leadership of Pombal, perhaps helping us to understand the "inter-relations of accounting and the state" and accounting change [Miller, 1990, p. 316]. In particular, the transition to state ownership may shed light on how ownership structure affects the cost and financial accounting systems of business entities.

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APPENDIX 1

**Inventory of Accounting Books of the
Real Fábrica das Sedas**

This inventory of 1115 accounting books includes 34 for the *Companhia da Fábrica das Sedas*:

	Period	Book No.
1.1 Accounting		
1.1.1 Main accounting books		
Ledger (<i>Livro Mestre</i>)	1745-47	718
Journal (<i>Livro Jornal</i>)	1745-47	720
Inventory	1745	214
1.1.2 Auxiliary accounting books		
Cash	1746	267
Account of the amount the house cost	1735-44	536
Partnerships entries	1734-42	980
Sheet of the partners' interest	1735-47	303
	1738-47	304
	1735-54	305
	1735-45	306
	1738-50	537
Current accounts of partnerships	1734-45	797
Invoices from abroad	1745-47	516
	1747-49	523
Shipments	1735-45	712
Debtors waste-book	1735-49	520
	1747-48	530
Foremen wages	1745-47	521
	1747-50	290
Several accounts waste-book	1745-47	522
1.2 Crude Silk Warehouse and Materials		
1.2.1 Warehouse		
Entrance and exit of silk and other products	1734-45	1054
	1747-51	1050
Entrance and exit of silk to the socks factory	1747-50	1051
1.2.2 Dye-house		
Dyers account	1747-50	289
1.3 Tint Silk Warehouse		
1.3.1 Warehouse		
Entrance and exit of silk and other products	1745-47	574
	1747-50	1049
1.3.2 Silk clothes		
Computation of the cost of silk cloth (the original title of this book was "Invoices book")	1745-46	676
	1746-47	675
1.4 Sale		
1.4.1 Sale warehouse		
Entrance and exit of silk cloth	1734-45	1020
	1745-47	978
	1747-50	621
1.4.2 Shop of the company at Douradores Street		

Entrance and exit of silk cloth	1747-50	1048
Sales of the shop waste-book	1745-48	758
	1747-50	524

These books are related to the three administrations in the following way, with some common to two or three administrations:

	Administration						Total
	1	2	3	1,2	2,3	1,2,3	
Main accounting books		3					3
Auxiliary accounting books	5	4	3	2		3	17
Crude silk warehouse	1		3				4
Tint silk warehouse		2	1		1		4
Sales	1	1	3		1		6
Total	7	10	10	2	2	3	34

Call for papers for a special issue of *Accounting, Auditing and Accountability Journal*: “Accounting and the Visual”

This special issue aims to contribute to a recent and steadily growing interest in organizational visual images and methodologies with particular application to the field of accounting. In essence, the practices of accounting for and auditing organizational activity relate to visualisation – rendering tangible and intangible values visible in the form of reports, charts, graphs, diagrams, and pictures for instance. These artefacts can fruitfully be studied from a visual perspective as being traces of – and drivers for – organizational action, processes and culture, as indeed can organizational artefacts more generally. Likewise, the changing image of accounting as a profession can be read visually, for example trends in corporate architecture, space and accountants’ professional identity.

The extent to which organisations trade on their image in such societies is also worthy of attention. Branding, organizational and/or corporate aesthetics management, and the construction of symbolically redolent buildings are all visual activities, and ways of accounting for the visual is also a theme we might usefully engage with. For example, in New Zealand, the ‘arts bonus points’ scheme allows organizations to gain more favourable planning decisions if they agree to invest in and display publicly accessible artworks in their buildings – importantly, these points are tradable, effectively creating a market that leads to the concept of an ‘aesthetic bottom line’ (Monin and Sayers 2006). In addition, accounting and management control processes can be studied visually through the use of documentary photography, photo-elicitation techniques and respondent-led photography.

In sum, as contemporary societies become defined by their ‘visual culture’ and technological advancements mean that ‘the image’ becomes all-important in every sphere of life, so organizational and accounting scholars must engage with these developments theoretically, empirically and methodologically. To date, the role of images and the visual world has been strangely overlooked in organizational research despite having a healthy provenance in the social sciences more generally, and a prominent profile across arts disciplines and associated cultural studies. This special issue aims to begin to rectify this neglect.

With these ideas in mind, we invite contributions that address *any* aspect of the visual and accounting, whether theoretical, empirical or methodological. We would particularly welcome creative, innovative approaches to the topic. An indicative, but not exhaustive, list of what we see as potential questions or approaches of interest is given below:

- Financial reporting as visual artefact
- Reflections of the image-dominated society within accounting
- The impact of developments in visual technology on accounting
- Visual representations of tangible and intangible values
- Visual rhetoric and accounting
- The role of the visual image in branding
- Corporate aesthetics management
- Accounting for the visual image
- Management accounting and the visual
- Architecture and the accounting profession
- The changing visual image of accountants’ professional identity
- Visual images as historical records of accounting interest
- Photo-elicitation as a contemporary and/or historical research method
- Respondent-led photography as a research method
- Parallels between art and accounting
- Studies that criticise the desirability of an increasingly visual approach

The submission deadline for this special issue is 1st March 2008, but earlier submissions are welcomed. Manuscripts should be sent electronically by email (in a word file format) to Dr Samantha Warren, University of Portsmouth (sam.warren@port.ac.uk) All papers will be reviewed in accordance with AAAJ’s normal processes Authors are asked to follow *Accounting, Auditing & Accountability Journal*’s standard formatting requirements. For details, visit <http://www.emeraldinsight.com/info/journals/aaaj/notes.jsp>.

Authors wishing to discuss their papers prior to submission may contact any of the three guest editors:

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THE EMERGENCE OF MECHANICAL ACCOUNTING IN THE U.S., 1880-1930

Abstract: For centuries, accounting was a manual process. Starting in the late 1800s, a series of technological innovations emerged that not only changed the way the accounting process was conducted but dramatically changed the workplace, the workforce, the information provided, and the accounting profession itself. By 1930, most major US companies had adopted mechanical accounting as a more efficient way of processing accounting information. This paper examines the historical development and influence of mechanical accounting in the U.S. from 1880 to 1930.

INTRODUCTION

For centuries, accounting was a manual process. Whether by quill or steel pens, entries were recorded by hand in the journal and posted by hand to the ledger. Although there were devices (abacus, Napier's rods) that helped with basic computations, most accounting tasks (e.g., totaling, closing entries, trial balances) were dependent upon the mental and manual dexterity of the accountant for their completion. In large organizations, prompt access to financial information was basically impossible due to a need to conduct extensive and time-consuming manual searches through bound ledgers, resulting in "trial balances [that] appeared at historic intervals, and departmental digests and comparison reports were almost unheard of" [Lefingwell, 1926, p. 18].¹ "Typically, only external transactions were re-

¹In a vivid description of the information process before mechanization, Lefingwell [1926, p. 18] writes: "The average executive preferred to keep most of his facts in his head rather than burrow through the hand-made office encyclopedias

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corded,” for even in the late 19th century, there was no efficient way to process management accounting information, and the demand for such information was only emerging [Yates, 2000, pp.108-109].

Starting in the late 19th century, a series of information processing innovations emerged that changed not only the way accounting tasks were accomplished but dramatically changed the workplace, the workforce, the information provided, and the accounting profession itself. Although there was an early reluctance to accept such innovations, by the third decade of the 20th century, the adoption of mechanical accounting by major companies was nearly universal in the U.S. The “mechanical” period would last for two more decades until there emerged a second major innovation in information processing, the computer. In contrast to the computer’s electronic era (vacuum tubes, transistors, chips), the mechanical era was dominated by devices that were dependent upon the mechanical actions of levers, gears, and wheels to process data. Although hand operated at first, later mechanical devices were often electric or motor driven; however, they still relied upon levers or gears to process data. Thus, although referred to as electric calculators or billing machines, they remained mechanical in nature.

An examination of mechanical accounting is important for the evolution of mechanical accounting encompasses far more than the simple adoption of information processing innovations such as typewriters or bookkeeping machines. In actuality, mechanization changed nearly every facet of the business world and accounting. Mechanization would be a major contributing factor to the expansion of the availability of information that became necessary for the emergence, expansion, and managerial control of large corporations. As Chandler [1977, p. 19] points out, “a constant flow of information was essential to the efficient operation of these new large business domains.” Prior to mechanization, however, such information often was unavailable, or, if available, its cost was “almost prohibitive because of the expense and time involved” [Galloway, 1919, p. 83].

Johnson and Kaplan [1987, p. 8] note that often the information required was cost or managerial in nature, and “without a corresponding increase in the quantity and quality of manage-

to dig out his information. If the proprietor of a large enterprise wanted to get a line on a given department, he usually went into that department in person and stayed there until he had made a check-up. Personal contact was his chief means of intercourse both with his employees and his customers.”

ment accounting information, these organizations would not have been able to capture the full potential gains from increased scale of operations." With mechanization, managerial and financial data became easier and quicker to obtain at a much reduced cost. In fact, these methods became "so rapid and inexpensive... they encouraged new uses of data not thought of by the original systematizers" [Yates, 1994, p. 41]. As a result, in Abbott's [1988, p. 228] view, "the machines created, virtually overnight, the field of cost accounting."

There has been considerable controversy as to when cost accounting actually emerged. As Tyson [1992, p. 2] points out, by the early 1820s and 1830s in the Lowell cotton textile mills, "cost information was fully utilized by mill owners and managers and, in conjunction with other disciplinary and social factors, provided critical information needed to the business profitably." Chandler [1977, pp. 109-120] writes extensively about the development and use of cost systems by the railroads in the mid-1800s in the U.S. However, as Marquette and Fleischman [1992, p. 130] write, during these early periods, "accountants, on the other hand, were unimpressed by cost accounting and generally considered 'cost-keeping' and 'cost-finding' the work of others." This indifference was to change with mechanization, for companies could now obtain the data needed to implement cost systems and establish sales analysis programs [Strom, 1992, pp. 181-182]. With the increased importance of and demand for such information, the accountant was forced to become involved with cost finding and cost analysis or risk the loss of influence in this area.

Mechanization was also an important contributing factor to the separation of bookkeeping from accounting. With the onset of mechanical accounting, the recording of accounting information became routine and repetitive. A bookkeeper or clerk could process, at a lower cost, the information that the accountant once had recorded. At the same time, the type of information that companies needed was changing. Corporations now required information for capital management, standard costing, financial statement preparation, and cost and ratio analysis – information that bookkeepers could not provide, but accountants could. While accounting became responsible for providing and analyzing financial/managerial data and the way the information was to be used [Abbott, 1988, p. 228], bookkeeping became routinized, concerned primarily with clerical tasks. Accounting became a profession while deskilled, repetitive, task-based bookkeeping became a trade.

The mechanization of bookkeeping was a major factor in the genderization change of the bookkeeping workforce. With a perception as a menial task with few opportunities for advancement, bookkeeping became an occupation for women. In addition to the demand created by a shortage of male bookkeepers, women were perceived to have greater manual dexterity and greater patience with routine tasks [Oppenheimer, 1968, p. 227]. Moreover, women could be hired at much lower wages. Thus, while accounting remained largely male, women began to dominate the bookkeeping workforce. Unlike previously, when bookkeepers were paid a "skill" premium in comparison to other jobs, the "deskilled" female bookkeepers were paid considerably less [Cooper and Taylor, 2000, p. 556].

With an increased demand for accounting information and accountants, the accounting area became more complex with additional layers of management. Within accounting, major changes had to occur to accommodate mechanization because the mechanical devices could process the information only if it was uniformly presented. Thus, standardization of accounts and reporting, within a company and an industry, became necessary for the efficient processing and analysis of information. With mechanization came centralization as the bookkeeping function; machines often were located in a single office. Macve [2002, p. 465] adds that it was this business expansion that led to "the modern explosion in accounting, and the growth of the modern accounting and auditing profession in the nineteenth century." In only 60 years (1870-1930), the number of accountants/bookkeepers in the U.S. increased from circa 54,000 workers [U.S. Census Office, 1872, p. 706] to more than 900,000 [U.S. Bureau of the Census, 1933, Tables 3, 49].

PREVIOUS STUDIES

Though the mechanization of information processing affected many facets of the business world, studies have often concentrated on the effect of mechanization upon labor and the composition of the office workforce, of which bookkeepers were increasingly considered a part. These studies [e.g., Coyle, 1929; Baker, 1964; Rotella, 1981; Davies, 1982; Lowe, 1987; DeVault, 1990; Fine, 1990; Strom, 1992; Kwolek-Folland, 1994; Wootton and Kemmerer, 1996] have traced the transformation of the office workforce (typists, secretaries, stenographers, bookkeepers) from predominately a male occupation to one primarily staffed by women, who were paid substantially lower wages than the men they replaced.

In several studies, Yates [1982, 1985, 1989, 1991, 1993, 1994, 2000] examined the changing needs for communications within businesses and the development of innovative communication, storage, and analyzing devices (e.g., file systems, press books, tabulators, telegraphs, typewriters) to serve these needs. Yates [1994, pp. 28-29] has also set forth the concept that while, for many years, there was little need for extensive financial/managerial information due to the owner/manager structure, the availability and cost of such information became increasingly important as companies grew larger and more geographically diverse, resulting in management becoming separated from ownership.

Studies also have examined individual business machines and/or the effects of innovation upon specific industries. Norberg [1990] examined the introduction and the effects of punch-card machines on business and government in the early 20th century. Campbell-Kelly [1992] reviewed the introduction of data-processing innovations at the Prudential Assurance Company to handle the vast amount of information generated within the insurance company. Wootton and Wolk [2000] traced the development of the loose-leaf system, its influence upon accounting, legal challenges to the concept, and its final acceptance by businesses. In November 2004, a special *Accounting, Business & Financial History* issue appeared whose purpose was "to provide a forum for the expression and hopefully the further development, of ideas relating to the historical impact of technological change on banking and the financial services" [Batiz-Lazo and Boyns, 2004, p. 226]. Included here was Bonin's [2004] discussion of the introduction of accounting machines in French banks from the 1920s to the 1960s. Commenting on the articles, Cortada [2004, pp. 235-236] wrote that the "topic of how information technologies were used by individual industries and organisations is a vast untapped area of exploration."

One important area for exploration is the influence of mechanization upon the cost/managerial side of accounting practice. Accounting innovations were largely responsible for the dramatic change in the availability and timeliness of accounting information and the noticeable decrease in the cost of processing such information. Moreover, mechanization had a major influence upon the "development and use of standard accounting systems" by corporations and trade groups (e.g., Retail Dry Goods Merchants Association), for as Geier and Mautner [1932, pp. 336, 338] wrote: "machines can only be economically applied when the operations are such that there is an endless

duplication of transactions.” Mechanical accounting also had a significant influence upon the evolution of financial/managerial accounting and the resulting expansion of accountants’ responsibilities. Finally, the entry and role of women into accounting/bookkeeping for nearly one hundred years were defined and influenced by mechanization.

PURPOSE AND SOURCES

The purpose of this paper is to examine the historical development and influence of mechanical accounting from its beginnings in the late 19th century to its widespread use by most large companies in 1930. In doing so, we examine the informational, economical, and social forces that influenced and ultimately led to its use in the business world. Especially useful to our study were the contemporary discussions of the merits, weaknesses, and implementation of mechanical accounting contained in such journals as *System*, *World's Work*, *The Magazine of Business*, and *Commerce, Accounts & Finance*. Equally important in the journals were the advertisements which first reflected the creation then, subsequently, the evolution and improvement of the mechanical devices. As the practical use of such machines was largely unknown, advertisements served an important role in the adoption of mechanical accounting by businesses. Moreover, the journals and advertisements of the period reflect the changing role of bookkeeping and women. Rarely seen in early advertisements, as comptometers and bookkeeping machines evolved, advertisements increasingly featured women as the machines’ operators and, by the end of the period, the only operators of such machines.

OUTLINE OF PAPER

The paper consists of five sections. The first section discusses the manual process of accounting before the emergence of technical innovations. The inflexibility of such a system is reviewed, and its hindrance on the collecting and reporting of financial/managerial information is noted. The section also examines the first emergence of basic informational processing devices (e.g., typewriters, adding machines). The second section examines the development of machines/systems (e.g., loose-leaf systems, bookkeeping machines) specifically designed for the processing of accounting information, and their influence upon the availability, cost, and analysis of such information. It notes that a new innovation often increased the efficiency of a previ-

ous innovation – a movement toward an accounting system. The third section reviews the mechanization of the accounting process. As the availability and flexibility of mechanical devices increased and the costs of such machines dramatically decreased, the use of mechanical accounting greatly expanded. With this expansion, bookkeeping became a trade, staffed by women, while accounting assumed a more managerial role, staffed by men. The fourth section recognizes the emergence of a true accounting system and contrasts the processing of accounting information in the 1880s with that in the 1930s. The final section presents the summary and conclusions of the study.

NEW MACHINES EMERGE, 1880-1895

In 1880, accounting was still a manual process. As both the journal and ledger were bound books, only one person at a time could work with a volume. Moreover, entries could not be recorded in a journal while it was being posted. Thus, larger companies often maintained two sets of journals in order that entries could be recorded in one journal while the other was posted. On the following day, the journals were reversed [Betz, 1944, p. 515].² Of course, with a bound ledger, only one person at a time could perform the closing process. The bookkeeper performing these tasks was a white male who considered bookkeeping a respected career with an excellent chance of advancement, maybe even the possibility that it might lead to one's own business [Wootton and Kemmerer, 1996, p. 548].

De Wit et al. [2002, pp. 69-70] write that office machines were usually introduced with one "specific functional domain" in mind, but due to the dynamic interaction between the producers and users of the machines, the functions of a machine normally expanded. The introduction of one technology often leads to "the development and use of other types." This was the case with the typewriter. Introduced with one activity (writing) in mind, the typewriter was the antecedent for the mechanization of accounting that followed. Its introduction and adaptation

²The number of books involved and the labor intensity can be seen in a description of the accounting process in a factory before the introduction of mechanical devices: "Factory accounting can be performed, long hand, by the use of the ordinary commercial books, which are a blotter in which is recorded a plain statement of every transaction made, a day-book, in which the blotter entries are translated into commercial language, a journal in which the day-book entries are once more translated into debit and credit items, and a ledger in which these debit and credit journal items are collected in individual accounts" [Arnold, 1901, p. 9].

would not only change accounting but the office place itself and the very composition of the labor force within the office.

For more than a hundred years, various writing (typing) machines had been patented; however, none had proved practical or commercially successful. Then, in 1873, E. Remington & Sons, a well-known manufacturer of firearms, agreed to manufacture a "type-writer" that Christopher Latham Sholes, aided by Carlos Glidden and James Densmore, had spent five years perfecting [Bliven, 1954, pp. 42-56]. Although the original market for type-writers was thought to be reporters, lawyers, and authors [Cortada, 1993, p. 16], by the early 1880s, the type-writer or caligraph had begun to gain acceptance in businesses.

The introduction of the typewriter also coincided with the U.S. becoming the world's leading industrial nation [Chandler, 1990, p. 47], and the emergence of large corporations that were dependent upon the prompt completion of reports to keep track of their vast operations. Although first used to type letters and office memos, the typewriter was soon seen as a way to prepare invoices and reports.³ In contrast to reports that "had to be laboriously written out by hand," reports now could be prepared at the rate of several words per minute. Purchase or sale invoices could be completed in a few minutes, especially if a business used prepared forms that had "spaces for entering specific information" [Yates, 1991, p. 122]. Companies, such as Sears, Roebuck & Co. and Montgomery Ward, found typewriters and their adaptations essential to their operations. Sears often filled 100,000 orders a day from a single Chicago plant [Chandler, 1990, p. 61]. With increased sales and invoices, managers in "credit and collection" departments found it essential to work closely with those in the accounting department [Chandler, 1977, p. 222].

In addition to increasing the efficiency of the typewriter, the use of preprinted forms also encouraged greater consistency and uniformity in the reporting of financial information. Consistency in reporting was essential as companies expanded their manufacturing capabilities and branch offices throughout the U.S. and the world. Moreover, standardized forms "made it easier to extract the data for compilation and analysis at higher levels." Using carbon paper, typists could even prepare several

³In a 1890 advertisement ["Caligraph," 1890, p. 12] in *The Atlantic Monthly* emphasizing the "caligraph" as "best for manifolding (making multiple copies)," the American Writing Machine Co. "caligraph" was listed with a price of \$85.

copies of an invoice at once [Yates, 1994, pp. 32-33].⁴ With such innovations, the cost of processing information noticeably dropped [Page, 1906, p. 7682], and with lower costs, the demand for information increased. In addition to the demand for information created by expanded operations, the need for financial information was further increased as large corporations began to provide some, but often crude, financial reports to their shareholders [Norberg, 1990, p. 757].

Although the typewriter increased the efficiency of processing information such as invoices, it could not directly enter accounting transactions in bound records. It would be nearly two decades (1896) before the loose-leaf accounting system emerged, permitting individual journal/ledger sheets to be placed around a typewriter's platen for processing. As a result, the typewriter had to be modified to work with bound volumes, and the modification became known as the book-typewriter. The premise behind the book-typewriter was that it would type on a flat surface, but instead of requiring ledger sheets to be brought to the typewriter, the typewriter would go to the ledger. The first flat-surface typewriters emerged around 1891, when two competing companies, the Elliott Book Typewriter Company and the Fisher Book Typewriter Company, introduced typewriters, both with flat platens that could record accounting transactions directly in bound volumes [Moore, 1932, pp. 56-57].

The book-typewriter, which had a flat keyboard, was placed above a bound volume, and the carriage, the writing mechanism, moved on rails along the surface of the book with the "type bars strike[ing] downward." An important feature of the Elliott book-typewriter was "the tabulating attachment which permits the operator to jump from the last character...on a column to the exact place...on the next column" ["Elliott Book-Typewriter," 1902, p. 436]. Although developed for recording transactions in bound volumes, the book-typewriter because of its ability to make multiple copies quickly became used for "all sorts of billing and inter-office reports as well as general commercial billing and

⁴In 1906, Page [pp. 7682-7683] related the prior practice of recording sales at his Dry Goods Commission: "Our old office practice in charging goods was to have the bill, the duplicate bill, the salesbook and the sheet for our Boston house written by four different men to whom a fifth called off the terms, yardage, etc." and "there were three sets of men...for the three sales departments." Continuing, Page stated that the men were replaced by one billing clerk, who through the use of carbons recorded the same information, and a woman, who "extends the yards on the comptometer and extends the bills on the arithmometer, and does the work of six men with great ease."

statistical recording" [Moore, 1932, p. 57]. The book-typewriter's ability to type upon various surfaces and to make multiple copies (manifolder) made it especially attractive to banks and railroads. *Commerce, Accounts & Finance* ["Book Typewriter," 1902, p. 28] reported that one railroad employed more than 700 book-typewriters "for way-billing freight, twelve or fifteen copies of these way-bills being required."

At approximately the same time as the book-typewriter was introduced, the first widely available, commercially successful, adding machines (adders) and calculators (arithmometers) became available in the U.S. Like the typewriter, adders or calculators had been patented for over a century in various countries. Some calculators like the Thomas arithmometer, developed by Charles Xavier Thomas de Colmar in France around 1820, became successful in Europe and continued to be used there for nearly a century [Cortada, 1993, pp. 27-28]. However, in the U.S., the Thomas arithmometer achieved little popularity, and most accounting computations continued to be performed manually.

In the late 1880s, however, this changed with the introduction of the "comptometer," "a multiple-order key-driven calculating machine," developed by Dorr Eugene Felt [Turck, 1921, p. 75]. Martin [1925, p. 93] wrote in an early history of calculating machines, "the comptometer belongs to the class of true calculating machines because not only addition and subtraction but also multiplication and division may conveniently be carried out." Moreover, comptometer items "could be footed directly from the book or papers, while to be added the old way they would have to be listed" ["Mechanical Accountant," 1902, p. 27]. By 1888, major production of the comptometer had begun [Turck, 1921, p. 75], and, in the following year, Felt received a patent for his comptograph, a device similar to the comptometer except that it printed results [Martin, 1925, p. 104]. During the same period, William S. Burroughs received a patent for his recording-adder machine [Turck, 1921, p. 95]. Although Burroughs did not live to see the success of his machine, the company he founded, the Burroughs Adding Machine Company, became a leader in the development of billing and bookkeeping machines.

In only a few years, dozens of adders/calculators entered the marketplace with the principal market being businesses [Cortada, 1993, p. 26]. These machines had an immediate impact upon accountants and auditors, greatly increasing their efficiency, since computation was a major component of accounting. In

fact, Seward [1904, p. 607] in *Engineering Magazine* stated: "addition, indeed, makes up about 95% of all the accounting work required in a factory." Previously, in order to prepare a trial balance from a ledger, to determine totals from invoices, or to determine the cost of manufacturing an item, each number had to be first listed on paper and then the column totaled manually. Once calculated, the total had to be verified by re-adding the column. Companies even employed "lightning calculators," "people who could add long, wide columns of numbers rapidly" [Cortada, 1993, p. 27]. With the adding machine, account balances could be entered directly into the machine without first listing the balance with the total automatically determined. *Commerce, Accounts & Finance* [1902, p. 27] commented on the increased efficiency: "There is no class of arithmetical work connected with accounting...on which it cannot be used, when skilfully operated, at a saving of from one-half to three-quarters of the time required by an expert mental computer."

Although it would be the early 1900s before it would be widely utilized for this function, the calculator/comptometer also made possible the "rapid and accurate analysis" of data [Abbott, 1988, p. 228]. Previously, data had to be manually processed. Many companies did not collect or analyze financial/managerial data because of the cost and time involved [Galloway, 1919, p. 83]. With the calculator, costs could be quickly obtained, and the determination of unit costs became a simple process. As accounting tasks (e.g., trial balances, closings) could be completed in a timelier manner and at a lower cost, more businesses began to prepare quarterly or monthly reports instead of simply an annual report.

Another important impact of the adding machine was that it often allowed an accountant to be replaced by a clerk. As Cortada [1993, p. 30] writes, "a less well-paid clerk could do more work with an adding machine than a better-paid accountant working by hand." There was a consequence of replacing an accountant with a less well-paid clerk, namely, the loss of status for the task being performed. Actually, at this time, the status for clerical work was diminishing in all facets of the business office. There was a movement toward functionalization; that is, workers specialized in one function or on one machine, greatly increasing their efficiency and output. With the introduction of mechanical processors (e.g., typewriters, comptometers), the need for an office in which these functions could be centralized also increased [Yates, 1989, p. 10]. Thus, at many firms, the operators of typewriters and comptometers were assigned to

a “central” office. As specialization and the number of clerical workers increased, those performing the tasks suffered a loss of status, a deskilling of the positions. Prior to mechanization, clerical jobs often were considered as “transitional” positions, a job which would lead to upward progression in the firm or a position in which one could secure the knowledge necessary to start one’s own business [Fine, 1990, p. 10]. At most firms, the clerical workforce was small and consisted of white, middle-class men. Thus, as Cooper and Taylor observe [2000, p. 561]: “Clerks of the mid 19th century were the predecessors of modern middle management rather than the army of clerks found in the modern workplace.” However, with the vast increase in the clerical workforce, a thousand-fold in 60 years, coupled with functionalization [Hooks, 1947, p. 75], a clerical job was no longer considered a transitional position. It was perceived as a deskilled, dead-end job, often occupied by women. DeVault [1990, p. 17] writes that, at this time, there was the widely accepted belief that women were well-suited for “routinized, dead-end employment.”

With the increased demand for office workers and a shortage of potential male workers, the composition of the clerical workforce changed, including the bookkeeping area. Prior to mechanization, bookkeepers held a well-respected position within the firm, often assuming responsibilities that would now be considered managerial [Rotella, 1981, p. 52]. However, with specialization, the duties of the bookkeeper changed from managerial to task-based. With a shortage of men available for bookkeeping positions and the lower wages women commanded, companies began to hire women as bookkeepers [Wootton and Kemmerer, 1996, pp. 578-579]. In 1870, less than 1% [U.S. Census Office, 1872, p. 706] of the bookkeepers in the U.S. was women; however, by 1890, the number had risen to more than 17% [U.S. Census Office, 1897, Table 116]. Although they were paid substantially less than male bookkeepers, women in bookkeeping positions normally earned considerably more than women in nearly every other area [DeVault, 1990, p. 56]. Thus, bookkeeping became an attractive employment area for women. Yet, at the same time, the field of accounting offered few employment opportunities for women [Wootton and Kemmerer, 1996, pp. 556, 581].

NEW METHODS OF INFORMATION PROCESSING, 1896-1915

With many companies recognizing typewriters and adding machines as essential to their businesses, manufacturers began

to design machines more directly related to specific industries or accounting needs. In adopting accounting innovations, banks often preceded other types of organizations. For example, in the mid-1890s, Leicester Allen developed what was called "Allen's double entry accounting machine." The Allen machine recorded a deposit/withdrawal of cash on the depositor's bank book while at the same time generating "a paper tape, giving the number of the depositor's book, and the amount" which became the permanent record of the event [Arnold, 1901, p. 383].⁵ In 1896, an Allen machine was accepted for trial by Union Dime Savings Institution in New York. After a three-year trial, two more machines were purchased. The noted accountant and president of Union Dime, Charles E. Sprague, wrote: "I consider the Allen Double Entry...a valuable invention...It insures desirable results which - with less certainty...could be attained only by the employment of two special clerks" [Arnold, 1901, p. 381]. Given the adaptability of mechanical accounting devices to the banking industry, manufacturers often sought and advertised such financial institutions as customers. For example, in a 1900 advertisement ["Burroughs Registering...," 1900, p. 93] Burroughs Book-keeping Company emphasized the adoption of its registering accountant machine by over 3,000 banks, small as well as large" (emphasis in the original).

Near the end of the 19th century, another innovation occurred that greatly increased the efficiency of accounting, the loose-leaf system. Like the typewriter, it was an innovation easily integrated with others, a process that greatly hastened its further development. Up to this time, accounting transactions were recorded in bound journals and posted to bound ledgers. For larger businesses, the process was quite complex and labor intensive [Wootton and Wolk, 2000, p. 83]. Bound ledgers also prevented more than one person at a time working on an account, thus greatly slowing the closing process. Moreover, a bound system prevented further modification of the typewriter to process accounting information more efficiently. Although the book-typewriter could enter transactions in bound volumes, it was a large, slow, sometimes difficult to operate machine [Oden, 1917, pp. 54-55].

⁵Before accepting the Allen double entry accounting machine for trial, the Union Dime Savings machine set 19 specific requirements that the machine had to meet. Most of the requirements dealt with the prevention of fraud by the machine user and the maximum time required to complete an operation, "the average time of the entire operation is about twenty seconds" [Arnold, 1901, p. 383].

Garner [1954] points out that, in addition to being conducive to the modification of the typewriter and the creation of the bookkeeping machine, the loose-leaf system (often represented as the “card system”) played an important role in the development of cost accounting and the introduction of perpetual inventory. Henry Metcalfe in 1885 articulated the card system as an essential element in the control and determination of raw material costs, advocating that “a card should be made out for almost every possible type of transaction or transfer of material” [Garner, 1954, p. 92]. As Metcalfe [1885, p. 20] pointed out, the card system was much more flexible and efficient in a large factory “where books required to transact the morning’s business numbered 18 and weighed about 60 lbs.”

The card system was widely used for inventory control. In 1899, H.L. Arnold, in *Complete Cost-Keeper*, described a “stores ledger card system” in which the balance in the materials account “was known at the end of each day,” and which would be physically verified “at least every sixty days” [Arnold, cited by Garner, 1954, p. 95]. By 1904, “cost authorities were referring to the perpetual inventory plan [stores ledger card] by its present title [Garner, 1954, p. 96].” Even in banks, which Sprague [1913, p. 100] noted had previously “posted the depositors’ accounts from these clumsy books and not from the easily handled (deposit) tickets,” now “universally” posted from the tickets.

Two leading companies in the vanguard of the loose-leaf system were Baker-Vawter, which began national sales of a loose-leaf ledger in 1896 [Vawter, 1917, p. 17], and the Krag Manufacturing Company, which began sales of the Tengwall file system in 1897 [Stoeckel, 1940, p. 26]. Both systems were similar to today’s three-ring notebooks in that leaves could be added to or removed from the binder [Wootton and Wolk, 2000, p. 88]. The loose-leaf system allowed the greater use of adding machines as several accounts could be totaled at the same time, significantly reducing the time required to close accounts. Another advantage was that loose-leaf forms could be inserted directly into typewriters or bookkeeping machines for processing. As a result, the “total” accounting system, combining the loose-leaf system with a bookkeeping machine, became the emphasis of advertisements by manufacturers of both. As Moore [1932, pp. 67-68] notes, without the “equal development” and acceptance of loose-leaf and standardized forms, “the business machine industry could not successfully exist.”

Another major innovation for processing accounting information was the tabulating machine. Leffingwell [1926, p. 164]

commented on why the tabulating machine emerged: "It [was] almost imperative that the age-old, slow, inaccurate, and costly methods of gathering data be supplanted by some mechanical substitute." However, the gathering of such information was dependent upon the "recording, storing and retrieving, analyzing, and presentation of large amounts of numerical information within companies" [Yates, 2000, p. 112]. Although some companies may have kept such records, the manual cost to actually process the information made it virtually unusable except for the largest companies where the tabulating machine found its initial and greatest use.

It was the need to process large amounts of data that led to the development of the tabulating machine. Employed at the U.S. Census Office, Herman Hollerith knew that census information was still being tabulated five years after the 1880 census was conducted [Harmon, 1975, p. 102]. With this in mind, Hollerith began work on a machine that could process great amounts of data. In 1889, the Census Office considered three methods of tabulation for the 1890 census, including Hollerith's card tabulating system, which was eventually selected. In contrast to the seven and one-half years needed to compile the 1880 census, Hollerith's machine permitted the 1890 census to be tabulated in less than two months [Harmon, 1975, pp. 102-103]. Recognizing the commercial possibilities of the machine, Hollerith started the Tabulating Machine Company, ultimately IBM, in 1896. For over a decade, Hollerith faced little competition. However, in 1911, James Powers formed the Powers Accounting Machine Company, later acquired by Remington Rand, which used a different method of tabulation [Harmon, 1975, pp. 106-107].

Seeing the success of the tabulating machine in processing census data and recognizing its potential for analyzing such data, companies that generated large amounts of data soon were renting their own tabulating machines. Among the major users of tabulators were the railroads where "one of the most widespread uses of tabulating machines was in railroad freight accounting and rate statistics" [Norberg, 1990, p. 766]. For example, shortly before the turn of the century, the New York Central Railroad installed several tabulating machines, each with four attached adding machines. Scott [1905, p. 5976], referring to the tabulators' benefit to the New York Central, wrote: "(it) will compute shop costs, analyze and take account of sales, make distribution of expenditures, and make almost any analysis of a great volume of facts...(and) where the amount of business justifies its installation it is much cheaper." In the case of the New York

Central, the amount of data was phenomenal. It was estimated that tabulators processed approximately four million waybills in 1897 [Norberg, 1990, p. 762]. The use of a tabulator also had an effect on the duties of the railway accountant. With a lower-paid bookkeeper or clerk responsible for data entry, the accountant now assumed responsibility for the determination of what data (costs) should be gathered.

Another area in which there was a vast amount of information to process was the insurance industry. At the turn of the 20th century, it was estimated that the largest insurance companies each had approximately one million small insurance policies (collected weekly) and one hundred thousand larger policies (collected monthly) which had to be recorded, billed, and collected. The companies also faced multiple-states regulations of their policies and were under some pressure to provide "a quasi-public service at the lowest cost possible" [Yates, 2000, pp. 130-131]. Thus faced with a vast amount of data and a need for detailed cost information, insurance companies, such as Continental Casualty, began to make extensive use of tabulating machines, especially in the area of financial analysis. On one "claim settlement card," Continental stated that it could record the policyholder's account number, address, age, type of claim (one of 9,999 different possibilities), settlement date, and amount of settlement. The cards could then be sorted (e.g., by type of claim) at the rate of 300 cards per minute and totaled at the rate of 150 cards per minute. With this information, the general auditor of Continental Casualty stated that the company could "determine with absolute precision not only the claim cost of the many different forms of accident and health policies that we issue, but...determine very easily what each of those conditions contributes toward the total cost of any form of policy" [Luse, 1911, pp. 60-62]. In contrast to the slow, expensive, manual collection of information, companies could now obtain cost data quickly and inexpensively, encouraging them to request even more information.

With the capability now of determining the actual costs of a policy or process, the next logical step was to develop a "standard" cost for the product. However, the determination of a standard cost required an expansion of costing theory, or, as Abbott [1988, p. 232] writes, "[the] estimation of standards required solving the 'burden problem' [of allocating overhead costs], smoothing out random fluctuations in shop work, and calculating the effects of fluctuating factors of production." Thus, the accountant's responsibility expanded beyond the mere reporting

of numerical data. The accountant had to become involved in the day-to-day operations of a plant, to analyze complex production processes, and now to make the assumptions required to set a standard that could be used to evaluate the efficiency of future output. In Abbott's view [1988, p. 232], it was "these conventions [that] created the crucial judgments that made cost accountants real professionals."

By 1910, the "complete" billing machine had emerged. Three popular billing machines were the Elliott-Fisher, the Moon-Hopkins, and the Underwood [Schulze, 1913, p. 42]. A billing machine combined the features of the typewriter with the adding machine. This allowed a simultaneous "billing and ledger statement posting," which led *The American Business Manual* [Montgomery, 1911, p. 279] to declare: "The compound [billing] machine is probably the most efficient and accurate mechanical device ever designed." These "compound" features were often the focus of advertisements. For example, Elliott-Fisher ["Billing and Adding...," 1906] claimed that its billing machine would do "all the typewriting capable of being done by any typewriter" plus "all the printing and adding of figures hitherto done by Adding and Listing Machines." In fact, the advertisement stated: "It will print the figures in columns and automatically total the figures wherever the column or columns may be located." The price of the Elliott-Fisher billing machine, including one adding register, was \$325. A separate register (price \$60) was required for each column to be totaled. Thus, the total price of a billing machine that could record and total two columns was \$385.

Although accounting machines were comparatively expensive, companies could recover their initial costs through greater efficiency. In 1914, the Gulf Pipe Line Company reported that its use of seven Burroughs listing machines allowed it to reduce the size of its accounting department from 39 to 35 employees, saving "at least \$500 per month" [Lewis, 1914, p. 164]. In another illustration of cost efficiency, the Warner Sugar Refining Company reported that its bookkeeping department now consisted of "three girls and three bookkeeping machines." These "girls" could post 1,000 accounts a day, prepare the brokerage statements, and write all checks. Using a bookkeeping machine, Warner Sugar reported that one operator "takes the place of three men" [Galloway, 1919, p. 84]. The "girl" was typically paid a lower wage than a male employee [Wootton and Kemmerer, 1996, p. 569].

As the complete billing machine emerged, there were continued improvements in the operations of adding machines

and calculators. Major brands (e.g., Dalton,⁶ Wales, Barrett, Mechanical Accountant) extensively advertised their machines' advantages. However, for basic computations, the comptometer remained the machine of choice as it was recognized as very fast and very reliable. Moreover, many comptometer operators were trained by the machine's manufacturer, greatly increasing their efficiency.⁷

Despite the proliferation of accounting machines, there was a demand for a machine that could total multiple columns or calculate sales by departments as it determined the total sales of a business. In response, the "duplex" adder, a machine that could do multiple computations at once, was introduced in the early 1910s. The duplex had two separate adding wheels, upper and lower rows, and the ability to transfer amounts between wheels. Therefore, it could conduct two operations at once. Among the most successful duplexes were the Burroughs duplex and the Burroughs cost keeping machine, which had greater computation capacity and flexibility than the duplex. A 15-column duplex would allow a company to "add six columns of five figures each at the same time" [Lewis, 1914, p. 181]. With the "unlimited split" option, the number of figures in a column could be increased or decreased to meet a company's needs. Thus, businesses could record and total both the costs and selling prices of merchandise at the same time.

While the duplex machine was useful for cost and price information, it was particularly useful for payrolls. With a duplex, a company could calculate and record the payroll for each department at the same time the total payroll was determined. Burroughs even offered a "payroll" version that printed the employee's payroll number and earnings for the period on individual payroll envelopes at the same time as it recorded the payroll sheet [Lewis, 1914, pp. 179, 188].

⁶Although most adding/calculating machines (e.g., the Burroughs, comptometer) were full-keyboard machines at this time, the Dalton adding machine was a ten-key adding machine. In contrast to the full-keyboard models where operators had to look at the keyboard, the Dalton could be operated by touch [Martin, 1925, p. 133].

⁷Felt & Tarrant Mfg. Co., the manufacturer of the comptometer, sponsored a training program on the use of its machines. The length of the training program was from two months to ten weeks with six hours of training each day. In 1915, the usual tuition to attend a training program was \$40 with five to seven students in a class [Eaton and Stevens, 1915, p. 214]. In their comments on the placement of its graduates, Eaton and Stevens wrote, "great effort made. Good operators not idle. Girls trained according to demand."

Another use for the duplex machine was cost determination and control. Webner [1917, pp. 173-180] examined how the “mental calculations” of a card cost system could be reduced through the use of a duplex machine. The duplex’s great commercial success was emphasized in a 1913 Burroughs’ advertisement. “This ‘two-in-one’ machine in a little more than a year has made a big ‘hit’ 2,600 out of the 20,000 Burroughs machines sold last year were Burroughs Duplexes” [“Burroughs Duplex...,” 1913].

With the geographic expansion of American businesses and the wave of mergers between companies, the information required to manage these widespread operations grew dramatically. With the increased demand for information, there occurred an explosive growth in the office workforce needed to provide it. For example, from 1890 to 1910, the number of typists and stenographers increased from 33,418 to 316,693 [U.S. Bureau of the Census, 1914, Table 15]. As the clerical workforce expanded, there was a corresponding increase in the number of bookkeepers/accountants needed to process the financial information required by these companies.

With the greater acceptance of mechanical innovations, the separation of accounting from bookkeeping accelerated. Previously, many bookkeepers had worked directly with their employers [Fine, 1990, pp. 166-167]. Moreover, the accountant/bookkeeper had “assumed responsibilities that [were] managerial” [Rotella, 1981, p. 52]. However, with mechanization and specialization, the collection and recording of information were often moved to a central office where the financial information was processed by a bookkeeper or clerk. In regard to this change, Sweetland [1906, p. 196] wrote: “It might appear that the various mechanical aids...make a mechanical accountant. But they really make the accountant less mechanical by giving him only mental work.” Thus, it was the accountant who now assumed the “managerial and planning aspects of the bookkeeper’s job” [Strom, 1992, p. 185].

Although the separation of bookkeeping from accounting had begun, the bookkeeper and the accountant were still considered to perform the same tasks for census purposes and were thus classified in the same category. In only 20 years (1890–1910), the number of bookkeepers/accountants increased from 159,374 to 482,814. However, the increase of women in the bookkeeping/accounting workforce, largely as bookkeepers, was even more dramatic, increasing from 27,772 to 184,999 [U.S. Bureau of Census, 1914, Table 15]. By 1910, women comprised

more than 38% of the bookkeeping/accounting workforce contrasted to only 1% in 1870.

THE MECHANIZATION OF ACCOUNTING, 1916-1930

By 1920, the market for tabulating machines had expanded beyond traditional users, such as railroads and insurance companies, to large manufacturers.⁸ Companies in the rubber, textiles, and automobile industries, for example, found that tabulators could reduce the menial side of information gathering, allowing them to concentrate on identifying and analyzing data [Norberg, 1990, pp. 767, 772].

Tabulators also began to have an impact upon the accounting area. Kent [1918, p. 137] related the effect of the introduction of the Hollerith tabulating system upon the accounting and costing process of the Pennsylvania Steel Co. With its adoption of tabulators, the company substantially reduced its accounting workforce and basically eliminated the need for accountants to work at night. Before the adoption of the tabulator, it was not normally until the 15th of the next month before a cost statement could be prepared. With the new technology, cost reports could be completed in five to seven days. Furthermore, whereas 27 products had previously been costed and analyzed, now 130 products were individually tracked.

Other companies, such as Marshall Field and Eastman Kodak, made use of tabulating machines to implement new costing and sales analysis programs [Strom, 1992, pp. 181-182]. The Larkin Company, a food distributor, used the punch-card system to manage its inventory. Scovill, which already used a Hollerith machine to process large quantities of data, added to its operation a Powers tabulator, justifying its need: "The Powers Machine will open up a large field of statistical investigation and presentation" [Davis, 1919, quoted in Yates, 1991, p. 147].

In addition to aiding the analysis of information, tabulators increased the timeliness of cost/financial reports. One reason for this efficiency was that the tabulating system allowed manufacturing costs to be entered on cards as incurred; then "at the end of the month [these data could be] quickly sorted and tabulated to obtain the information required to close the books and for

⁸Unlike other business machines that could be purchased, sorting and tabulating machines normally had to be rented. In 1924, the costs to rent a Hollerith's sorting machine and a five-counter printing tabulator were \$25 and \$150 respectively per month. The keypunch machine could be purchased for \$100 [McCarthy, 1924, p. 358].

posting to the detail cost records” [Eggleston and Robinson, 1921, p. 417].⁹ Tabulators also allowed “bookkeeping” departments to prepare daily balance sheets, which, in turn, allowed management and “accountants” to analyze changes in balance sheet items [de Wit and van den Ende, 2000, p. 99].

While the tabulating machine gained acceptance by larger manufacturers, the development of the accounting machine continued. As a result, while some companies still advertised billing machines (e.g., the Moon-Hopkins¹⁰ billing machine), many advertisers (e.g., Burroughs, Underwood) hawked bookkeeping or figuring machines, which emphasized the machines’ more expansive nature. Other companies (e.g., Elliott-Fisher, Remington) even labeled some of their products “accounting machines.”

Regardless of their names, these machines performed many of the tasks that previously had been done manually. No longer did a transaction have to be recorded in a bound journal, posted to a bound ledger, and the balance manually determined. Machines could now record a transaction in the journal and ledger at the same time and strike the balance automatically [Geier and Mautner, 1932, pp. 250-251]. However, the person recording the transaction was probably no longer an accountant but a clerk or bookkeeper. The accountant was the person supervising the bookkeeping department. This concept of the accountant as a director, not a recorder, was emphasized in advertisements of the period. In an advertisement for its bookkeeping machine, Elliott-Fisher stated that the machine lifts the accountant “out of the *machine-class*...and gives you the opportunity to use your

⁹Other uses for tabulating machines included inventory control and billings. One company used three punching machines, one sorter, and three tabulators to keep track of the merchandise it distributed to 400 grocery and meat stores in New York. Upon receipt of merchandise, the company classified the goods and entered the data upon cards. As goods were distributed, the respective cards were removed, tabulated, and “a regular invoice [is provided] in duplicate, showing the number of units, description, weight, retail price, and retail extension of each classification of merchandise delivered” [Leffingwell, 1926, p. 178]. Moreover, the company could determine its inventory at any time by simply running the remaining cards through the sorting and tabulating machines.

¹⁰Although still referred to as the Moon-Hopkins billing machine and often recognized as the leading billing machine by this time, its original manufacturer, the Moon-Hopkins Company, had been acquired by the Burroughs Adding Machine Company. The major advantage of the Moon-Hopkins was its rapid processing of invoices. The price of the basic Moon-Hopkins, without a multiplier-subtractor, was \$650 while the advanced electric model was \$950 [McCarthy, 1924, p. 432].

time, your hands and brains in *directing* work ["Turn That Book-keeping..." 1915] (emphasis in the original).

The idea that a bookkeeping machine could take over the manual aspects of accounting was delineated in a two-page advertisement in *System* ["*New York Times*," 1923, pp. 704-705]. In the ad, Underwood Typewriter Company claimed that the *New York Times* had installed 12 Underwood bookkeeping machines in its accounting department. With the machines, the department was assured that "all the business of that day has been recorded – all the charges made – all the credits entered – all the balances struck."

The concept that a bookkeeping machine was to work with the accounting department as well as to improve its efficiency was emphasized in advertisements of the period. In introducing its new "automatic-electric," flat-surface accounting machine, Elliott-Fisher stated that the only way to see how "this machine can be used in *your* accounting department...[is to] see it in operation." As did similar machines, the Elliott-Fisher "automatic-electric" eliminated several manual steps. It automatically returned the carriage, spaced lines, tabbed columns, totaled columns, decimal spaced, aligned forms, fed carbons, and provided a written proof of balance ["Announcing the New..." 1926, pp. 844-845]. Martin [1925, p. 116], in his early history of the calculating machine, described how an electric upright Burroughs machine worked in an office:

The account sheet is fed into the automatic jump carriage...the old balance is typed...the electric key is pressed...the date is automatically typed...the debit is automatically subtracted...the credit is automatically added...the new balance is automatically calculated and typed...the account sheet is ejected...at the end of the workday, the machine supplies a check of the entries...except for the fact that the amounts that are to be entered must be typed, and the electric key must be pressed, the machine operates automatically throughout.

As accounting machines advanced, the basic adding machine/calculator also improved. With a noticeable increase in the number of manufacturers, the prices of machines dropped sharply. Emphasizing price and reliability in introducing its adding machine, the Victor adding machine Co. stated that it produced only one model. While it was comparable to other mass-produced adding machines, the company could offer an

eight-column listing machine for “a startling price” of \$100 [“One and Only One...,” 1923, p. 803]. Victor’s price contrasted with other “five-column machines selling at about \$250, and nine-column machines in the \$300 to \$400 range” [Darby, 1968, p. 29]. With this price advantage, the Victor Company’s machine was a success. In two years, nearly 100,000 adding machines were sold [Darby, 1968, p. 58]. With lower prices, more businesses were able to afford the machines. It was not long before the adding machine became a required item in most offices [Cortada, 1993, p. 268].¹¹

Some manufacturers combined the adding machine with other business machines. In its advertisements, the Sundstrand Adding Machine Company emphasized that businesses need to make decisions based upon daily information, and that its “Combined cash register-adding machine” allowed a company to “keep a perpetual inventory, keep a record of sales by departments, keep a record of each clerk’s sales, and classify expenses for rent, salaries, etc.” [“Merchants...,” 1922, p. 731]. Although Felt & Tarrant’s comptometer continued to be recognized as a fast, reliable calculating machine and its advertisements emphasized the comptometer’s “99.4% first time accuracy,” other manufacturers now offered competitive machines [“For Speed With Accuracy...,” 1925, p. 805]. Indirectly criticizing the training required for the efficient use of the comptometer, Monroe Calculating Machine Co.’s advertisement emphasized that the Monroe “can be used by an inexperienced clerk” and one “you can operate yourself when you wish to get out confidential figures” [“Ten Reasons...,” 1925, p. 794]. At this time, the price of a Monroe calculator ranged from \$200 (6 x 6 keyboard, 12 places answer) to \$400 (10 x 10 keyboard, 20 places answer) [Martin, 1925, p. 251].

With the gathering and processing of data largely mechanized in larger firms, the final separation of bookkeeping from accounting could occur. This growing separation was reflected by the U.S. Bureau of Census which, for the first time in the 1920 Census, separated bookkeeping from accounting in its reporting categories. Bookkeeping was now a trade, a clerical task [Kirkham and Loft, 1993, p. 513]. In contrast to the apprentice-

¹¹Two years after the introduction of Victor’s \$100 model adding machine, the Portable Adding Machine Sales Company advertised a seven-column adding machine, built by the Corona Typewriter Company: “Truly portable [listing] adding machine” for \$65. In contrast to other machines weighing up to 100 pounds, the portable machine’s weight (16 lbs.) was an attractive feature [“At Last...,” 1925, p. 784].

ship concept previously used to train most bookkeepers [Sampson, 1960, p. 460], they were now expected to bring with them knowledge of and an ability to use office machines. Bookkeepers, normally women, received such training in business courses in high schools or in special business schools, thus needing little additional training on the job [Blau and Ferber, 1992, p. 30]. In contrast to bookkeeping, the technical knowledge that accountants were expected to bring to the job increasingly required a college education or college courses. Yet, at several colleges, women could not take accounting courses, while at others, women could take accounting courses only in night programs. At nearly every college, women were discouraged from seeking careers in accounting [Wootton and Spruill, 1994, p. 242].

While bookkeeping was becoming a trade, accounting had evolved into a profession with management responsibilities [DeVault, 1990, p. 22]. With the separation of responsibilities and perceptions, dramatic changes took place in the workforce. Although the accountant was most likely male, the person operating the bookkeeping machine probably was a female who was paid substantially less than the male bookkeeper she succeeded in the job. By 1920, while 56.1% of bookkeepers were women, only 11.3% of accountants were [U.S. Bureau of Census, 1923, Table 4].

The change in the composition of the bookkeeping workforce and the corresponding change in responsibilities were also reflected in the advertisements of the period. Whereas in the early years of mechanization, advertisements normally presented the machine operator as a man, they now pictured the operator as a woman. In a typical advertisement, comptometer ["The Bookkeeper," 1916] emphasized how a "girl" with a comptometer could increase the efficiency of an "accounting" department. Instead of accountants having to prove the postings and balance the accounts in a ledger, the ledger now could be turned over to "the girl and the machine in the above picture" and she "will prove the postings...and balance the accounts" for them ["Bookkeeper," 1916]. There was now a separation of the accountant from the bookkeeper with the latter responsible for the menial tasks and the former for supervision.

MECHANICAL ACCOUNTING

By 1930, for most companies, the processing of accounting information had changed from being a manual process to a largely mechanical one. In his study of the use of accounting

machines in French banks, Bonin [2004, p. 267] points out two major reasons for this transformation: "They [accounting machines] helped reduce the number of employees and cut operating costs while, on the other hand, they improved the quality, reliability and speed of services." At this time, whether the firm was French or American, it was most likely that machines were designed or manufactured in the U.S. The U.S. had become the leading provider of accounting and tabulating machines throughout the world [Cortada, 1993, pp. 41-43]. These machines were also cost effective. For example, in 1923, one French bank estimated that the cost of its Burroughs accounting machines could be recovered in 14 months [Bonin, 2004, p. 260].

While accounting machines could be credited with the coincident reduction of the workforce and operating costs, the accounting transformation was greater, for it had reached what de Wit et al. [2002, p. 65] refer to as an "innovation junction" where "the successful integration of system machines into an administrative organization called for much closer cooperation between suppliers and users, who also frequently called on consulting firms for advice about office technology." This was the case in the U.S. Now there were companies that offered complete accounting systems that could handle nearly every phase in the processing of accounting information. If a business could not install its own accounting system, a company could be hired to do so. If a business was unsure of the system it needed, IBM advertised: "International Business Machines for forty years have been solving problems of this kind" ["It's Profit that Counts...", 1929, p. 100]. If IBM could not provide an answer, perhaps Baker-Vawter ["Accounting a Problem...", 1927, p. 859] could. Its advertisement recommended that all businesses should use an accounting machine; the question was: "Which accounting machine can I use to best advantage? And that is just where the Baker-Vawter man can help."

The changes in the availability and processing of accounting information in only fifty years were dynamic. Whereas in 1880, accounting computations were basically manual operations, by 1930, a business could purchase a printing Victor adding machine for \$75 ["These are the Days...", 1929] or a Marchant portable calculator for \$125 ["Add-Multiply-Subtract-Divide," 1929, p. 455] to handle the computations. The loose-leaf system, which offered greater flexibility and efficiency, had replaced the bound volumes of the manual system. Moreover, loose-leaf sheets could be used in electric accounting machines. The

development and use of uniform accounting systems within industries and companies accompanied the innovations. For example, by 1930, the Retail Dry Goods Merchants Association had developed a uniform accounting system “for use in department stores and other retail stores.” It recommended to its members the “machines that have been found to be most capable of performing the operations embraced by that system” [Geier and Mautner, 1932, p. 338].

In addition to the development of standardized systems, accounting machines and systems were devised for specific needs. For a business with installment sales, Remington Rand [“Do You Sell...,” 1928, p. 776] offered the Kardex visible systems (“which signal due dates and warn against bad credit risks”), the Baker Vawter-Kalamazoo loose-leaf system (“available for installment accounting”), and the Remington accounting machine (“particularly suited to posting installment accounts”). For banks, there was the Dalton dual bank bookkeeping machine, designed for “the posting of commercial checking accounts, savings accounts, stock records, etc.” [Geier and Mautner, 1932, p. 278].

By 1930, the Burroughs Adding Machine Company offered a machine for any size company and for nearly any accounting need. In collaboration with the National Standard Parts Association, Burroughs developed a manual [*N.S.P.A. Manual of Standard Bookkeeping*, 1929, pp. 3-24] for the Association’s jobbers in which the functions of individual machines were described. For a small business, there was the Burroughs typewriter billing and bookkeeping machine so “the small Jobber will be able to obtain all the advantages of mechanical accounting.” For larger jobbers with greater billings, there was the Burroughs typewriter billing machine that “writes and computes a complete invoice in one operation, including all typing, extending, figuring of discounts and totaling of the bill.”

Machines were also designed for specific industries. For example, Burroughs manufactured a billing machine specifically for gas, electric, and water utilities. The operator had only to enter the customer’s account number with the previous and present meter readings, and the billing machine computed the amount of consumption, determined the customer’s charge, prepared the customer’s bill, updated the customer’s ledger account, and automatically injected and ejected the forms. The cost of the machine was \$2,925 [McCarthy, 1924, p. 470].

SUMMARY AND CONCLUSIONS

As the mechanization of accounting progressed from the introduction of the typewriter to the more sophisticated calculating machines, coincident changes also occurred in the accounting workforce and the way managers viewed the information they needed to run their organizations. By 1930, “mechanical” accounting was in use at most major companies. Along with the general acceptance of mechanical accounting came the progression of accounting beyond bookkeeping and the perceived role that women would play in each.¹² The changing gender composition of the bookkeeping/accounting workforce is presented in Table 1. Prior to the 1920 Census, the U.S. Census Office classified accountants/bookkeepers “of all kinds” in a single category. In 1920, recognizing the separation of accounting from bookkeeping, the U.S. Census Office created two categories for classification purposes – accountants/auditors and bookkeepers/cashiers.

Bookkeepers using mechanical devices recorded and posted transactions, prepared invoices, received and made payments, and totaled the accounts and ledgers. Since these tasks were considered repetitive [Erickson, 1934, pp. 16-17] and more of “a mechanical process” [Parsons, 1917, p. 188], the “prevailing view at this time was that bookkeeping” was a proper area of employment for women [Wootton and Kemmerer, 2000, p. 182]. Thus, instead of hiring men as bookkeepers, companies began to hire white, middle-class women [Fine, 1990, p. xvii]. Whereas less than 1% of bookkeepers were women in 1870, by 1930, the number had risen to more than 60% (see Table 1). However, as

¹²There are several studies that have examined the entry and role of women in the fields of accounting and bookkeeping. Wescott and Seiler [1986], Reid et al. [1987], and Legge [1988] present broad studies of women’s entry into the profession. Lehman [1992] examines the obstacles women faced entering the profession and the theories that explain women’s “stratification” in the profession. Kirkham and Loft [1993] examine the separation of bookkeeping and accounting in England and Wales and, as a result, bookkeeping becoming “feminized.” McKeen and Richardson [1998] look at the entry of women into the Canadian accounting profession. Shackleton [1999] traces the admission of women in Scotland as chartered accountants. Wootton and Kemmerer [1996, 2000] review the genderization of bookkeeping and accounting in the U.S. Walker [2003a] explores the entry of women to bookkeeping in late 19th century Britain, and finds retailing and distribution as areas in which initial employment was often found. Walker [2003b] examines the role and influence that household accounting had upon the entry of women into the outside job market, and found that it helped contain women in the private household sphere. Hammond [2003] summarizes “international research on race and gender.”

TABLE 1
The Changing Gender Composition of the
Accounting/Bookkeeping Workforce, Men and Women,
in the U.S., 1870 to 1930

	Total	Men	%	Women	%
Year of 1870					
Book-keepers & Accountants	54,041	53,489	99.0	552	1.0
Year of 1890					
Bookkeepers & Accountants	159,374	131,602	82.6	27,772	17.4
Year of 1910					
Bookkeepers & Accountants	482,814	297,815	61.7	184,999	38.3
Year of 1930					
Bookkeepers & Cashiers	739,077	273,380	37.0	465,697	63.0
Accountants & Auditors	191,571	174,557	91.1	17,014	8.9

Sources: U.S. Census Office (Bureau of the Census) (1872), Vol. I, Table XXIX; (1897), Part II, Table 78; (1914), Vol. IV, Table 15; (1933), Vol. 5, Table 6

with other office workers, the wages paid to women bookkeepers were substantially lower than those of the men they replaced [Fine, 1990, p. 73].¹³

In contrast, accountants were often considered professionals. The separation of management from ownership required someone to represent the shareholders' and creditors' interests in the company. That person often was the public accountant [Porter, 1995, p. 91], bringing to the audit a sense of independence and professionalism. Within companies, accountants were responsible for the preparation of the financial statements, the analysis of cost and financial data, and the development and implementation of accounting systems. Accountants were typically viewed as managers [DeVault, 1990, p. 22]. "Women were usually perceived as not having the emotional makeup, the judgement, the analytical reasoning, or the long-term commitment to the job that was required for a manager" or for

¹³Although female bookkeepers were paid substantially less than male bookkeepers, women employed as bookkeepers, as were most office workers in the early 1900s, usually earned more than women in other occupations (e.g., teaching, retail clerks, production workers) at that time [Fine, 1990, pp. 42-43]. Moreover, as Strom [1992, p. 205] points out, working conditions for bookkeepers or office workers usually were better than for women in nonprofessional employment.

an accountant [Wootton and Kemmerer, 1996, pp. 583-584]. Thus, while women comprised over half of the bookkeeping workforce, women constituted less than 10% of the accounting workforce (see Table 1), a percentage that did not noticeably change until the 1960s. While the mechanization of accounting may not be viewed as creating the changing genderization, it did significantly alter the types of job responsibilities previously performed by both sexes.

The mechanization of accounting also coincided with a vast increase in the demand for information. As Chandler [1977, p. 109] points out, with the emergence of the large corporation, “a constant flow of information was essential to the efficient operation of these new large business domains.” It was “bookkeeping, accounting, and statistical analysis...[that] allowed corporate managers to gain real control of their enormous organizations” [Strom, 1987, pp. 65-66]. The information they required was both financial and managerial, for “without a corresponding increase in the quantity and quality of management accounting information, these organizations would not have been able to capture the full potential gains from increased scale of operations” [Johnson and Kaplan, 1987, p. 8]. However, as Yates [1991, p. 120] observed: “This increased demand for internal information might have been curtailed by its high cost, except for some changes on the supply side of the equation.” The change in the supply side was the adoption of new technological advances in the processing of information. It was the acceptance of typewriters, loose-leaf accounting systems, bookkeeping machines, tabulators, and other innovations to process information that allowed American businesses to greatly increase the availability and timeliness of financial and cost information. It also was the availability of these machines that allowed businesses to analyze the information in-depth.

By 1930, the initial phase of the mechanization of accounting was complete. The machines (e.g., calculators, accounting machines, tabulating machines) that would dominate the processing of accounting information for the next two decades had emerged [Cortada, 1993, p. 159]. There would be advances in accounting information processing devices; however, these changes would be primarily improvements, not major technological changes in the way information was processed. It would not be until after the World War II “that a comparably rapid period of change” would occur [Yates, 1994, p. 47]. Then, as had happened at the turn of the 20th century, a series of major technological innovations occurred (e.g., computers, copiers) and the

second phrase of the mechanization of accounting began. Thus, an important area for further research is to examine this second phase of mechanization and its effects upon the further development of accounting – its professionalization and the composition of its workforce.

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THE PRINTING OF PACIOLI'S *SUMMA* IN 1494: HOW MANY COPIES WERE PRINTED?

Abstract: This paper considers the printing of Pacioli's *Summa de Arithmetica, Geometria, Proportioni et Proportionalita (Summa)* in 1494. In particular, it attempts to answer the question, how many copies of *Summa* were printed in 1494? It does so through consideration of the printing process, the printer of *Summa*, the size of the book, survival rates of other "serious" books of the period, and the dates it contains revealing when parts of it were completed. It finds that more copies were published than was previously suggested, and that the survival rate of copies has probably as much to do with the manner in which it was treated once acquired as in the number of copies printed.

INTRODUCTION

In 1494, Luca Pacioli's 615-page compendium *Summa de Arithmetica, Geometria, Proportioni et Proportionalita (Summa)* was published in Venice. It was written primarily for merchants [Strathern, 2001]. However, its influence spread far beyond that audience – it is said to have laid out the program for Renaissance mathematics [Rose, 1976], and it has been credited with having led to the development of probability by Pascal [Strathern, 2001]. The arithmetic part of *Summa* was seen as being of sufficient importance that only 21 years after *Summa* was published, it was translated or, more accurately, used as the basis for a book in Spanish [Andrés de Saragossa, 1515]. The 27-page treatise on bookkeeping contained within *Summa*, the first known published work on that topic, is said to have formed the basis for much of the writing on that subject for the following fifty years [Fogo, 1905] and to have laid the foundation for double-entry bookkeeping (DEB) as it is practiced today.

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Given its importance in the development of accounting, it is upon the bookkeeping treatise that most attention has been focused. Over the last 150 years, it has been translated into English five times [Geijsbeek, 1914; Crivelli, 1924; Brown and Johnston, 1963; Cripps, 1994; Gebattel, 1994] and into at least 13 other languages (Chinese, Czech, Flemish/Dutch, French, German, Italian, Japanese, Polish, Portuguese, Romanian, Russian, Spanish, and Turkish). It has been analyzed, dissected, and critiqued by dozens of researchers from the U.S. and the U.K. and also from most other countries where accounting is a university subject, including Australia, Brazil, France, Germany, Holland, Italy, Japan, Russia, and Spain.

Pacioli's status as the "father of accounting" is such that a 450-page biography of his life was published by Taylor [1942] and reprinted in 1980. A facsimile of *Summa* was printed in Japan in 1989, and the Academy of Accounting Historians produced a 27-minute film documentary on his life in 1990. There are Pacioli societies in Australia, the U.S., and Japan; a Pacioli Institute in Holland; an accounting software package and an academic journal named for him; and an annual tour to his birthplace organized by the Accounting Department of the University of Seattle.

When the 500th anniversary of the publication of *Summa* was celebrated in 1994, many more publications commemorating Pacioli's life and work were produced, including the printing of one thousand facsimile copies of *Summa* in Hungary and another facsimile published in Italy. Two new translations of the bookkeeping treatise appeared in English [Cripps, 1994; Gebattel, 1994] and others in Italian [Conterio, 1994], Spanish [Hernández-Esteve, 1994a], and French [Jouanique, 1995].

It would take weeks to read through all the sites listed by a Google search for "Pacioli" – 345,000 on May 7, 2006. Over one hundred academic articles have been published on Pacioli-related topics including the derivation of his name, whether or not he was a plagiarist, the date of his death, what form an unprinted special character in the bookkeeping treatise was intended to take, and the ambiguities in the text.

It is doubtful if as much has been written in the accounting literature about any other individual; yet, there still remain issues which have only been partially explored. One of these is the subject of this paper – the printing of the 1494 edition of Pacioli's *Summa*, including how often it was reprinted and, in particular, how many copies of that edition were printed. Only one author is known to have written on this topic, Antinori [1980],

who suggested that 300 copies were printed, a quantity for its day that would suggest it was of limited interest and unlikely to have been widely read or influential, none of which is consistent with the evidence presented in this paper.

This paper reopens this debate and is of interest in that it provides additional contextual information on the motivation for the publication of *Summa*. The fact that a book printed in small numbers is clearly intended for a different audience than a larger edition has much to say about whom Pacioli saw as the readers of *Summa*.

The paper starts with an overview of printing in the 15th century, followed by a description of the fledgling copyright system in existence at the time. It then considers the cost of printing, the selling price of books, and the motivations of authors in the late 15th century. There follows considerations of the quality of printing versus handwritten books, proofreading in the 15th century, the language of printing, and the printing process. The printer of *Summa* is then introduced, and the estimate of 300 copies made by Antinori [1980] is considered in the light of the printing process and other factors, including claims that *Summa* was a big seller. The paper concludes with a discussion of findings.

PRINTING IN THE 15TH CENTURY

The first known example of printing using movable type in Europe was published in Mainz, Germany in 1454. The first book, commonly referred to as the "Gutenberg Bible," was printed the following year. Approximately 150 copies of this two-volume, 42-line-per-page, 1,282-page work were printed on paper and 30 on vellum (parchment). Forty-eight copies are known to exist (www.mainz.de/gutenberg/english/bibel.htm). Germany dominated printing in the years immediately thereafter, and it was German printers who spread the use of the printing press throughout Europe in the 15th century.

The first Italian printing press was established in 1464 by two Germans, Sweynheym and Pannartz, who installed their operation at the behest of the local abbot in a monastery at Subiaco, 45 miles from Rome. In 1469, Johann and Windelin of Speyer founded the first press in Venice. There were at least 150 printers in Venice by 1500. By that year, at least nine million printed books were in circulation [Carter, 1995]. Some estimates put the figure much higher. For example, Jones [1997] wrote that by 1501, there were "1,000 printing shops in Europe, which

had produced 35,000 titles and 20 million copies.”

Febvre and Martin [1984, pp. 186, 215, 248] identified 236 towns in Europe that had printing presses pre-1500 and arrived at the same volume figure as Jones based on average print-runs of 500 copies. However, this is likely an underestimate given that the average print-run between 1480 and 1490 was 400 to 500 copies, rising to an average between 1,000 and 1,500 by the early 16th century. Richardson [1999, p. 21] suggests that 1,000 copies was the norm in Venice at the end of 15th century, as does Bernstein [2001, p. 11]. Harris [2006b] estimates that for books not expected to be big-sellers, 1,000 to 1,500 was the limit. Others dispute these figures. For example, it has been suggested that the number of copies printed up to 1501 rarely exceeded 300 [Cachey et al., 1993]. However, the weight of opinion is on the side of the figures derived by Febvre and Martin.

Partly because of the quality of low-priced paper and the ease with which it could be obtained [Brown, 1891, p. 24], by 1482 Venice had become the printing capital of Europe, a position it retained until a least 1530 [Febvre and Martin, 1984, pp. 183-184]. Richardson [1999, p. 6] presents data suggesting 5,000 editions (different books) were published in Venice before 1501. Such was its dominance of the printing market that between 1495 and 1497, almost one-quarter of all books in print were published in Venice [Febvre and Martin, 1984, p. 186].

The *Incunabula*¹ Collection of the Bancroft Library, University of California at Berkeley (<http://sunsite.berkeley.edu/incunabula/>) includes 142 books that were published in Venice before 1501, the earliest dated 1471, 23 years before the printing of *Summa*. Thus, while printing may have been in its infancy in 1494, Pacioli's *Summa* was by no means, as suggested by Weis and Tinius [1991], one of the earliest books to be published in Venice. Rather, it was actually one of hundreds of different books printed in Venice by that date, many of which have survived to this day, albeit often no more than in the form of a single copy.

COPYRIGHT

In the 1490s, Italian copyright laws were in their infancy. Where they existed, they extended protection across a very limited geographical area. Pacioli's *Summa*, for example, had a ten-year copyright when published in 1494, which was effec-

¹books printed before 1501

tive only in the area under the Venetian Republic's control. This meant that other Venetian printers were prohibited from publishing their own versions of *Summa*, but that printers located outside the area, such as in Tuscany, could freely publish pirated versions of the book.

In addition, the copyright granted did not prohibit copying a printed text by hand. Hand copying by scribes had been the norm since books were first written and continued to be commonplace after the coming of the printing press since scribes were in plentiful supply well into the 16th century. In fact, some 15th century bibliophiles so resisted printed texts that it was quite common for a printed book to be copied by hand so that the owner could have a unique, handwritten manuscript rather than a mass-produced book [Richardson, 1999, p. 9].

However, despite these practices being fairly common, no pirated copy of *Summa* or any scribal copy is known to have existed. The first known reproductions of *Summa* were facsimiles published in the late 20th century in Japan (1989), Italy (1993), and Hungary (1994). There are currently at least three websites at which scanned copies of *Summa* can be viewed and printed, one of which also sells electronic copies of the book for €12.

The lack of pirated copies of *Summa* can be explained, at least in part, by its great length. However, the book's greatest defense against pirating is that it is replete with diagrams and marginal notations which would make copying a relatively unattractive proposition compared to a text without such embellishments.

THE COST OF PRINTING IN THE LATE 15TH CENTURY

Printing in the late 15th century was a production process notable for its separation of tasks. It was organized around the printing press and, in all but the smallest enterprise, was undertaken by a team typically comprising two compositors, two pressmen, an apprentice, and a proof-reader (often the master printer, although sometimes the author). Printers were also frequently book publishers² and booksellers. [Eisenstein, 2005]

²The word "publisher" had a different meaning during the late 15th century from that which it has today. Publishers were, effectively, investors in printing, providing the funds to finance printing [Richardson, 1999, p. 29]. Sometimes the printer was also the publisher; sometimes a bookseller was the publisher; sometimes it was someone unconnected with the book trade. In the case of the 1494 edition of *Summa*, the sponsor of the book, Marco Sanuto, a wealthy Venetian

The printer had his own stock of inks, metal founts, and the wooden blocks used, for example, for the initial capital letter at the start of chapters and sections. Wooden blocks would often be prepared for specific books, as was the case with *Summa*, and, occasionally, special founts would be created to fit requirements stipulated by the author. Woodcuts or, alternatively, metal [copper] plates would be prepared for page bordering, diagrams, and pictures, including maps. Pacioli's work featured all of these. All these items were the responsibility of the printer, and it would be assumed included in the amount a sponsor or a publisher³ was willing to pay the printer to produce a book. Paper cost as much as printing. Printers did not pay for paper unless they were funding the publication. Paper costs were usually paid by the publisher, sometimes by the author.

During the period up to the publication of the Gutenberg Bible, the "age of scribes" [Eisenstein, 2005], all published books were copied by hand, mainly by monks or nuns for whom performing scribal duties was part of their normal day. The cost of using scribes was far greater than the cost of printing, one reason why so many printers set-up business in the last 30 years of the 15th century.

Comparing the cost of printing with the cost of using scribes, Febvre and Martin [1984, p. 112] present an example from 1483 where one Florentine printer, the Ripoli Press, was paid 3 florins per quinterno. (A quinterno was a bundle of four sheets of paper folded once giving 16 pages if printed double-sided or eight single-sided.) By comparison, a scribe at that time would expect to receive 1 florin⁴ per quinterno [Eisenstein,

and professor of mathematics who paid for it to be printed, was the publisher. The printer was the publisher of the second edition in 1523.

³Sponsors sometimes only contributed a proportion of the costs. Others, such as the author or a bookseller, could be the major investor in a book's publication.

⁴This paper mentions two different currencies, Florentine gold florins and Venetian gold ducats. They had virtually the same gold content and, therefore, typically exchanged at a ratio of 1:1. However, they were seldom used in every day transactions, which were usually in a coin of lower value called a soldo. The Florentine and Venetian soldi were not identical, either in their silver content or in the number of them that equaled a florin/ducat. In addition, exchange rates fluctuated considerably in the 15th century depending upon such events as fairs, harvests, sailings, changes in government expenditure, and the time of year [Lopez and Raymond, 1955, p. 150]. They also varied over time as a consequence of debasement/enforcement in the silver content of the currency involved. In 1464, there were 106 Florentine silver soldi per florin; in 1494, 130 [Munro, 2006]; in 1499, 137. Throughout that period, there were 124 Venetian silver soldi per ducat [Mueller, 1997, p. 656]. Mueller also provides the silver content of these coins in 1464 and 1499. On the basis of these data, and assuming the 1494 silver content

2005, p. 15]. At first glance, the printer would seem the more expensive, but the Ripoli Press printed 1,025 copies of the book compared to the single copy that a scribe would have produced. There were 30 quinternos in the book, so the total cost of printing 1,025 copies was 90 florins, equivalent to the cost of three scribal copies.

The scribes could not compete, especially with that particular printer, for the Ripoli employees were nuns for whom wages were considerably less than the “going rate” [Richardson, 1999, p. 160, fn. 53]. The printer could produce so many more copies than a scriptorium⁵ in the same time, and of a more consistent standard, that the cost of using scribes was uneconomical when publishing more than a few copies. Consequently, while scribes continued to be in demand for another 150 years or so, those who continued to work at the trade found the amount of work diminishing as the years passed.

As an indication of how much a “serious” book (i.e., bibles; textbooks; Latin, Greek, and Hebrew classic texts) cost to print in the 15th century, Richardson [1999, p. 25] describes the production costs of printing 930 copies of a bible, comprising 228 sheets of paper, printed in Venice in 1478. Paper and wage costs would have been about 500 ducats. Brown [1891, p. 26] states that the wage cost in this example was the equivalent of £500, approximately £36,400⁶ or \$65,500 in modern money (\$70 per bible). On the basis of Richardson’s view that the paper cost would have been about the same as the printing cost, each of the bibles would cost approximately \$140 at today’s prices.

THE SELLING PRICE OF BOOKS IN THE 15TH CENTURY

Not surprisingly, given the difference in the relative cost of producing such a book compared to a printed text, the purchase price of a “serious” scribal text in the late 15th century was many times that of a printed book. In cost-of-living terms, a manuscript copied by hand would cost the buyer the mod-

was the same as in 1499, the silver-based exchange rate in 1464 was 1 ducat = 0.98 florins; in 1494, it was 1 ducat = 1.13 florins; and, in 1499, it was 1 ducat = 1.17 florins. While the values were close, they were not the same as the 1:1 exchange rate for gold florins and gold ducats.

⁵A scriptorium was the name given to a group of scribes working simultaneously from a single dictation.

⁶conversion undertaken at www.measuringworth.com/calculators/ukcompare/ using the Retail Price Index

ern equivalent in U.S. dollars of \$2,000-\$10,000. The price of a printed book was equivalent to only a few hundred [Mack, 2005].

Printed short stories and early short novels were far cheaper and cost little more in real terms than they cost today. *Aesop's Fables*, for example, was selling in Parma in 1484 for 2 soldi (\approx \$2.12), and, in 1491, also in Parma, eight popular books were selling for an average of 2 soldi, 4 dinari (\approx \$2.47) [Richardson, 1999, p. 115].

Summa was a "serious" book. It was also an extremely large book and sold for 119 soldi [Dunlop, 1985, p.153], making it considerably more expensive to buy than most printed books at that time, the equivalent of over \$120 at today's prices using Brown's [1891] conversion rate.

To put these examples into the context of income rather than shifts in general price levels, the modal salary of a university teacher in Italy in the late 15th century was approximately 40-60 ducats a year (4,960-7,440 soldi). Even Pacioli, despite his prominence and reputation, was only paid one hundred florins a year, approximately 85 ducats at 1 ducat = 1.17 florins⁷ to teach Euclid at the University of Florence between 1499 and 1507 [Taylor, 1942, p. 295]. He never earned a university salary greater than 200 ducats a year.⁸

Thus, despite the cost of producing books in the late 15th century being many times cheaper than in the age of scribes and with the selling price of printed books being significantly less than scribal texts, prices of "serious" books remained high in relation to wages. It would have taken a week's income for a university teacher to purchase *Summa*. As a result, while printing significantly reduced production costs and the selling price of such books similarly fell, *Summa* was still beyond the pocket of the average person.

AUTHORS AND THEIR MOTIVATION

Book authorship in the late 15th century was, at times, similar to what is now referred to as "vanity publishing" [Richardson, 1999, p. 59]. When authors presented their manuscript to a printer, they were neither paid nor did they receive royalties [Febvre and Martin, 1984, pp. 159-61]. They often had to agree to buy a quantity of copies, sometimes as much as half or even

⁷See Footnote 4.

⁸the salary he was paid in Milan between 1496 and 1499 [Grendler, 2002]

more of the print-run. Sometimes they had to agree to meet all costs. In this way, the printer covered all his costs; any copies subsequently sold by him were virtually 100% profit.

When the printer believed there was a ready market for a book, the author would sometimes receive some free copies. In all cases, the rights to the work were assumed to have passed to the printer once the manuscript was submitted by the author. Possibly because it made the printer's life easier and may have helped create a good relationship between author and printer, as was the case with *Summa*, copyright applications were typically made on behalf of the printer by the author, rather than by the printer.

Authors earned money from publication of their books by giving signed, dedicated copies to the wealthy and influential who, in order to preserve their own reputations, would repay the author with financial grants or privileges [see, for example, Richardson, 1999, pp. 52-56]. In addition, like printers, authors acted as their own booksellers, selling their copies to bookshops and individuals.

Authors with little money who felt they had a ready market for their work were not only motivated by personal gratification but also by the financial incentive to seek a sponsor who would pay for the printing of their books. This was a major difference between the age of scribes and the age of printing, as there was between the qualitative aspects of books in the two eras.

BOOK QUALITY: THE AGE OF SCRIBES AND THE AGE OF PRINTING

In the age of scribes, no two copies of a manuscript contained precisely the same text; neither was a copy identical to the original. Such corruption of text was rife and a serious problem with the copying of manuscripts. In scriptoria, scribes worked from dictation and errors abounded, even though the head of each scriptorium was charged with ensuring that all scribes performed their work accurately. Even scribes working alone copying a manuscript could not avoid errors and omissions unless they took so long in completing the task that it became uneconomical for them. Scribes other than monks were paid on a piecework basis; the faster they worked, the more they could earn. Monks, who comprised the majority of scribes, were not generally paid, but speed was of the essence as volume of output was the driving force. Although there are some notable exceptions, most errors were not normally corrected, even when

identified, since to do so would have spoiled the look of the book. The concept of an errata list was an innovation of the age of printing that did not exist in the age of scribes.

Despite the greater consistency in the text they contained, early printed books had, if anything, a greater variety of errors than scribal texts; for example, errors in folio numbering and in running headers were fairly common. Neither device was used in the age of scribes. While individual copies of a printed book may have had a number of errors, these were not simply to be found in one copy, as in the age of scribes, but in as many copies as it took for someone to notice the error. Even then, an error would only be corrected if it was decided it would be worthwhile to halt the press to do so.

Nowadays, anyone who has written a book is well aware of the perils of typesetting. Correcting proofs is an essential part of the publication process. It is not uncommon for four or more people, including the author, to proofread a modern text concurrently, and for each of them to identify and prepare a different list of corrections.

Yet, despite this effort, modern books are seldom error-free and textbooks, in particular, frequently contain dozens of errors. Nobes [1995] draws attention to this ongoing problem by pointing out that just as there were typographical errors in Pacioli's bookkeeping treatise, so also were there in its 1994 translation by Gebattel. However, the incidence of printing errors was much worse in the 15th century than it is today. The principal reason was the approach to proofreading that existed at that time.

PROOFREADING IN THE LATE 15TH CENTURY

Type was set into a forme.⁹ Once a forme was typeset, it could be proofread before printing. If so, one person read from the mirror-image type while another checked what was read out against the text of the manuscript; clearly, a far more difficult process than proofreading printed text. Yet, this was often the only proofreading that took place [Richardson, 1999, p. 15]. Alternatively, one sheet could be printed and the press halted until it had been proofread. Either way, it would delay the printing so that proofreading was done quickly and inadequately, if done at all.

⁹A forme was comprised of type set for pages that would be printed together. The forme was held in place by a rectangular wooden or iron frame.

Sometimes, proofreading took place during printing, the press only being halted if a major error or omission was found. Typically, pages printed before the press was stopped and the typesetting corrected were not destroyed but included in the completed batch as if no errors existed. Evidence that this approach was used in *Summa* can be seen by comparing copies of the 1494 edition where, for example, folio¹⁰ numbers missing from or incorrect in one copy are in place and correct in another [Dunlop, 1985].

There was also the apprentice problem. While the compositor was a skilled tradesman, as in any trade, the apprentice was not. The apprentices had to learn and were given the "simple" tasks, such as typesetting the running headers and folio numbers. *Summa* is replete with errors in folio numbering and contains a number of incorrect or misspelt running headers, both distinctly easy items to check in the proofreading process, suggesting that the proofreading of the book was cursory at best.

There is a very clear example in *Summa* of the difference between 15th and 21st century proofreading. Nowadays, it is normal practice for the author to be involved. This was not the case 500 years ago. The examples at the end of the bookkeeping treatise contain a fundamental error which would be sufficient to confuse and undermine the confidence of those who thought they had understood everything to that point – the credit side of a journal entry contains the instruction to debit an item when it should have been a credit [Hernández-Esteve, 1994b]. It was never corrected in any of the known printings of either edition of *Summa*, which suggests that not only was the proofreading careless, but that Pacioli himself never read that part of the printed bookkeeping treatise, either while it was being printed or after it was published. This view is reinforced by an error in another of the journal entries, where the amount stated in the narrative differs from the amount shown in the money columns, an error perpetuated in the second edition.

It is inconceivable that the printer/publisher of *Summa* would have ignored a list of corrections compiled by Pacioli when it came to reprinting the book. To have ignored Pacioli in this way would have jeopardized their working relationship

¹⁰Page numbering as we know it did not become the norm until well after *Summa* was printed. In 1494, the practice of numbering each folio, each double-sided page, was becoming common although not universal, by any means. Pages in *Summa* are identified by their folio number, and the term recto (facing) and verso (back). Folio 144r in *Summa* is page 287 and 144v is page 288. The folio number is only shown on the recto side of the folio.

– the same printers published other work by Pacioli in 1509, for which Pacioli petitioned a 20-year Venetian copyright on behalf of the publisher (a 15-year copyright was granted).

This also raises another issue relating to the first bookkeeping error highlighted by Hernández-Esteve – could it have been in the original manuscript? If so, the manuscript was certainly derived from another document for nobody who knows DEB would have made the mistake in question, although a scribe copying an original manuscript could have done so.

THE LANGUAGE OF PRINTING IN LATE 15TH CENTURY VENICE

For a long time after printing was invented, most of the published bibles, classics, and textbooks were printed in Latin.¹¹ Among the educated, Latin was a second language common across much of Europe. However, the majority of people spoke only their local vernacular well, and what Latin they knew was sufficient solely for attending church. The vernacular varied from state to state within what was to become Italy. However, there was great commonality among the various dialects. With minimal exposure, citizens from other Italian states could understand and be understood in Venice as if they were themselves Venetians.

In order to maximize sales, books aimed at the general reading public rather than at the scholar or churchman were printed in the vernacular rather than in Latin, even if the target market was outside the state in which that vernacular was the dominant language. *Summa* was intended mainly for merchants, artists, engineers, and architects. Thus, apart from the bookkeeping treatise which is mainly in the Venetian dialect, the *Summa* is in the Tuscan dialect of 1494, with some occasional use of Venetian and a small amount of Latin [see Yamey, 1994, pp. 18, 22; Field, 1999, p. 301].

THE PRINTING PROCESS IN THE LATE 15TH CENTURY

The printing process in the late 15th century has been described many times [e.g., Febvre and Martin, 1984; Richardson, 1999; Eisenstein, 2005]. *Summa's* pages are folio-size, approximately 11.5 inches by 8 inches (30 by 20 centimeters). In

¹¹The only consistent exceptions are classic Greek texts which were published in Greek and Hebrew texts published in Hebrew. In both cases, these were for audiences who understood the language of the text.

folio printing, two pages were printed on each side of a sheet of paper. First, two pages were typeset, placed into a single forme, and the front ("recto") side of a sheet of paper was printed. The type was then removed from the forme and used with other type for the next forme which was then used to print the back ("verso") of the same sheet of paper. The printing on the back of the sheet could only be done when the paper was completely dried from the first side printing, usually the following day.

After printing had been completed on both sides, the sheets were typically grouped with three other sheets to make a quintero ("quire") of 16 pages of printed text which was then bound (sewn). This is confirmed as having been the typical grouping for the binding of *Summa* by the printer's signatures [Dunlop, 1961], although there are occasional instances in *Summa* of five (20 pages) and seven (28 pages) folios being bundled together in binding.

Although typesetting was a major task, standard-width characters were used, the equivalent of the fixed-space letter spacing to be found in the Courier font of Microsoft Word, making the switching of wrongly placed letters a relatively straightforward process. Since the formes were broken down as soon as the sheets had been printed, if a book was reprinted, the type had to be set from scratch which, given that type wore out and was often replaced with differently spaced characters, could play havoc with pagination [Dunlop, 1985]. As a result, reprinting was not something done without full consideration of the likely costs, the unsatisfied demand, and the potential revenue. Furthermore, anyone wanting one copy after none remained would find it cheaper to rent the book and pay scribes to copy it than pay the high premium for one printed copy. Consequently, reprints of even a few sheets were not generally undertaken to satisfy the demands of a single customer; rather, print-runs were of a significant quantity.

According to Febvre and Martin [1984], one hundred years after *Summa* was printed, in the late 16th century, a compositor would have been expected to create one to three formes per day and pressmen to print at least 2,500 sheets. When *Summa* was printed in 1494, techniques were less well-developed and typesetting and printing were slower. Typically, two compositors and two pressmen worked on each press. In the case of *Summa*, on the basis of the font used, the number of lines printed per page, and the complexity of the marginal annotations, a realistic expectation was that two compositors could typeset two formes per day, which could then have been printed on a single press at

the rate of 1,000 sheets printed on both sides per day [Harris, 2006b].

THE PRINTER OF *SUMMA*: PAGANINO DE' PAGANINI

The printer of *Summa* in 1494 was Paganino de' Paganini. He and his son Alessandro were the printers of all Pacioli's books known to have been printed between 1494 and 1523. Paganino de' Paganini was from a wealthy family and a relative newcomer to running his own printing firm when he printed *Summa* in 1494. Work known to have been completed by Paganini indicates that his press was a small operation in 1494, although the business grew when Alessandro took it over in the mid-1510s. At 615 pages, *Summa* would have been a huge book for its day, and it would certainly have been the firm's largest venture since its inception.

The last known work undertaken by Paganino de' Paganini before *Summa* was completed on December 9, 1493, virtually a year before he finished printing *Summa*. While it was commonplace for jobbing workers to be employed short-term by printers in the late 15th century, for a job of the size of *Summa* a more permanent team would have been involved. However, as the firm was small and in its infancy, it is likely that the same employees were used as on previous work – one or two compositors, two pressmen, an apprentice, and Paganini, the master printer, working a single press.

It is Paganini who would have done any proofreading. Despite Pacioli's being present during 1493 and 1494 to oversee the printing of the book and saying so in *Summa* [Taylor, 1942], it is clear he was not proofreading text. There are simply too many errors that he, the author and mathematician, would have identified had he been proofreading pages as they came off the press. If he checked anything, it is likely to have been the woodcuts used in the marginal notes to ensure that they were accurate representations of his artwork and that they were correctly positioned in the margin.

HOW MANY COPIES OF *SUMMA* WERE PRINTED IN 1494?

No records exist of how many copies of *Summa* were printed, either of the first (1494) or second (1523) edition. On the basis of a highly detailed analysis of differences between various copies of the 1494 edition, Antinori [1980, p. 40] hypothesized that there were 300 copies printed. However, in arriving at that figure, he does not consider the norms in the late 15th century

for the size of print-runs. As will be shown later, his estimate appears to have been a significant underestimate.

Setting aside Antinori's estimate, in the absence of any information other than the average print-runs at that time, it would be reasonable to infer that the print-run of *Summa* in 1494 was at least 500 copies. However, other factors indicate it may have been higher. Among these is evidence of some sheets being reprinted, the analysis of which goes beyond that conducted by Antinori; the number of extant copies of *Summa*; print output quantity limits and the time taken to print the last eight folios; and three estimates made over the last 90 years of the book's popularity.

Page Reprints circa 1502 and 1509: It is known that parts of the 1494 edition were reprinted at least twice [Business Historical Society, 1926], once after 1502, possibly to avoid expiration of the 10-year copyright, and the other after 1509 [Clarke, 1974], presumably taking advantage of a 15-year copyright granted to Pacioli in 1508. The later reprinted pages are noticeably different from the first printing, making it easy to demonstrate that the book had been reprinted.

Based on at least three definite printing dates/periods for the first edition, assuming a modern perspective that print-runs of the same book are typically of the same size, as many as 1,500 first edition copies of *Summa* may have been printed between 1494 and 1523. However, while some sheets were clearly re-typeset, the majority in both cases are as in the 1494 printing, which could only have occurred if the printer had a stock of pages left over from that printing.¹² It seems likely, therefore, that the total number of copies printed of the first edition was the number printed in 1494, bringing us back to the initial estimate of at least 500 copies. Support for a print run higher than 500 is provided by the number of extant copies.

Extant Copies: Boncompagni [1862-63] identified 72 extant copies of the 1494 printing, 19 of the post-1502 printing, and eight of the post-1509 printing. This suggests a pattern of sales indicative of a seldom-used reference text sold slowly over a long period, as might be expected of a book written mainly as

¹²It is inconceivable that the typesetter in 1502 or 1509 could have copied the layout of the 1494 typesetter on all but the few obviously amended pages. Wooden blocks used at the start of paragraphs and sections wear out and simply could not be reproduced identically.

a reference text for merchants [Harris, 2006b]. Boncompagni [1862-63] also counted 36 copies of the 1523 edition, suggesting that the print-run of that edition was approximately one-third of the 1494 edition.

Very little is known of incunabula print-runs versus extant copies. A quarter of known incunabula are represented by a single extant copy [Harris, 2006a]. In addition, Harris [2006c] estimates that only 1% of all copies of incunabula have survived and that as many as 40% of editions may have been lost. Two examples show the difference that may exist, possibly depending upon how much a book was actually read once acquired. It is thought that only 200 copies of the first edition of Neumeister's *Comedy* were printed, of which only about 20 (10%) are extant [Cachey et al., 1993]. Gingerich [2004] reports 277 extant copies (18%) of a print-run he estimates at 1,500 of *De Revolutionibus* by Copernicus, "the book nobody read," according to Gingerich. A survival rate somewhere between 10-20% may be normal for "serious" books from the period of *Summa*, depending to a large extent on whether they were read once acquired.

Taking a 10-20% survival rate of unread incunabula as a starting point, Boncompagni's count of 99 extant copies of the 1494 edition of *Summa* in 1862 suggests a print-run of 500 to 1,000 copies. The Incunabula Short Title Catalogue at the British Library currently shows 160 extant copies of the 1494 edition of *Summa*. It also distinguishes two more from the 1523 edition. However, the attribution of copies to dates has not been accurate; some 1523 copies being misclassified as from the 1494 edition. Taking these 162 copies and splitting them in proportion to those identified by Boncompagni, approximately three-quarters, or 120, are likely to be the 1494 edition.

The incunabula survival rates would suggest that the 1494 print-run of *Summa*, a "serious" book read and referenced to with care, was between 600 and 1,200 copies. However, there were other uses for a book of this type, such as classroom teaching, where the survival rates are even lower [Harris, 2006b], so a print-run higher than 1,200 is quite possible. Other evidence points to the actual print-run in 1494 being far larger – the print output quantity limits of the period and the time taken to print the last eight folios.

Print Output Quantity Limits and the Printing of the Last Eight Folios: Summa was printed in two volumes. Volume 1 contains 448 pages of text plus 16 pages of introduction; Volume 2, *Geometry*, has 151 pages of text. No record exists showing ex-

actly when printing started. However, Volume 2 was completed on November 10, 1494, and the introduction to Volume 1 was completed on November 20, 1494. The first quinterno in Volume 1 comprised the 16-page introduction and, following the practice of the time, would have been the last part of the book to have been printed. It, therefore, appears that the period from November 10-20 was required to print those pages.

Harris [2006b] estimates that compositors working on *Summa* could have averaged one forme each per day. This immediately makes a print-run of under 1,000 copies unlikely, since 1,000 impressions of two formes a day was the accepted pace of the pressmen, and a lower print-run would have idled the pressmen while the compositors were setting the next formes to be printed.¹³

At an average of 1,000 sheets a day, double-sided, printing the last 16 pages would have taken four days had the print-run been 1,000 copies. Assuming that the introduction was all that was printed during the nine working days between completions of the two volumes, the print-run for *Summa* could have been as large as 2,000 copies.

However, had the print-run been that large, the two compositors would have had to work on other jobs 50% of the time during those last nine days. They could set two formes per day, but the pressmen could only use one of those if printing 2,000 copies. Most printers always had work waiting to be done, especially as one project came to an end, and it is unlikely that the compositors would have been idle [Harris, 2006b]. Alternatively, compositors were generally paid on a piece-rate basis and may have worked at the pace of the press during this final phase of the printing of *Summa* if no other jobs were available. This mismatch between compositor and press speed was not a major problem during the last phase of a late 15th century printing project. However, it would have been had it existed throughout the project.

If the print-run of *Summa* was 2,000 copies, two compositors could only have worked concurrently if the printer used two presses and four pressmen. This is not unlikely as many printers had more than one press, but there is no evidence that Paganino de' Paganini was of sufficient size. Compared with other

¹³While this would not have been unusual as printers always had other work on hand such as pamphlets and leaflets to do, comments made concerning the popularity of the book support the hypothesis that a print-run as low as 1,000 copies was unlikely.

Venetian printers of the day, very little incunabula printed by Paganino de' Paganini has survived, perhaps indicating that his operation did not print very much during that period.

Had 1,000 copies been printed, two compositors would have been used, and the job would have taken approximately 154 days to print. At six working days a week, this is the equivalent of 26 weeks or six months. However, it is inconceivable that the last four double-sided sheets took nine days unless more than 1,000 copies were printed. If 1,500 copies was the number, it would have taken nine months, but both the pressmen and the two compositors would have been working at only 75% capacity.

On balance, based on print output quantity limits, it seems likely that 2,000 copies were printed, which would have meant it took approximately eight days to print the final 16 pages. If this was the size of the print-run, one compositor, not two, and two pressmen would have been required throughout the project.

Printing 2,000 copies would have taken approximately one year, the time available if the last job known to have preceded *Summa* had actually done so. The compositor would have set one forme each day, and the pressmen would then have spent the next day printing 2,000 copies. While this was being done, the compositor would have typeset the next forme. Further support for a print-run closer to 2,000 copies is provided by claims regarding *Summa's* volume of sales.

Claims that Summa was a "Big Seller": A "big seller" in the late 15th century can be defined as any book that sold over 1,500 copies [Harris, 2006b]. Evidence of this estimate comes entirely from secondary sources, but three scholars have delved deeply into the subject. Olschki [1918] wrote that, for fifty years after its publication, *Summa* was the most widely read mathematics work in Italy. Taylor [1942, p. 198] claimed that the second edition of *Summa* was even more popularly received than the first, justifying the publisher's decision to finance the second edition personally. Finally, Favier [1998, pp. 261, 276], then president of the French Bibliothèque Nationale and author of many books on the Middle Ages, averred that *Summa* was "an instant success and [was] for many years used by the business world" and that "merchants from every country rushed to buy this guide to accountancy." Secondary or not, these three testimonies support the view that the print-run of *Summa* was greater than the norm which, for "serious" books in the late 15th century was 1,000-1,500 copies [Harris, 2006b].

CONCLUSION

Summa was not a curiosity piece, published with a view to a limited market. It was intended to be sold in large quantities for its day, but sales were slow yet steady as evidenced by the 1502 and 1509 sheet reprints [Harris, 2006b]. The fact that Pacioli himself petitioned for a 20-year copyright in 1508 on any reprint of his 1494 book indicates that it continued to sell at a level that justified reprinting missing or damaged folios. The fact that the printers themselves acted as publishers and financed the printing of the second edition also supports the view that *Summa* continued to sell in significant quantities for many years following its original publication.

Available evidence – the reprinting of some sheets of *Summa*; the number of extant copies of *Summa* and the survival rate of other incunabula; print output quantity limits of the late 15th century; the time taken to print the last eight folios; and the apparent success of the book – makes it appear likely that the print-run of *Summa* was at least 1,000 copies, and probably, on the basis of the time taken to print the last eight folios, closer to 2,000 copies.

However, this conclusion must be treated with caution. It is one interpretation of a series of facts and information relating to a process that transpired 500 years ago. Unless the printer's records are discovered, there is no possibility of anyone ever stating with certainty what the print-run was of *Summa* in 1494. However, it can be said with certainty that the number of copies printed was significantly higher than the previously reported estimate.

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MAURICE STANS' VIEWS ON SOCIAL RESPONSIBILITY IN THE ACCOUNTING PROFESSION

Abstract: Maurice Stans (1908-1998) is remembered for his role in the Watergate scandal of the 1970s, but he was also an early contributor to the literature on the accounting profession's obligations to the general public. His writings and speeches in this area have a place in the history of social responsibility accounting. The paper discusses his writings as well as his comments collected in an audio-taped interview about his role in the accounting profession as president of the American Institute of Accountants, senior partner in Alexander Grant (now Grant Thornton), and one of the first well-known practitioners to discuss broadly the importance of the accounting profession's social responsibilities. Today when accounting scandals have created questions about the credibility and integrity of financial reporting, it is reflective to see how concerns about financial reporting were once articulated.

INTRODUCTION

Maurice Stans (1908-1998) is largely remembered for his political association with Richard Nixon and his role with the Republican National Finance Committee and the Watergate scandal of the 1970s. Yet, before his entry into the politics of the 1950s, he had distinguished himself in the accounting profession as one of the first senior partners in the firm of Alexander Grant & Company, president of the American Institute of Accountants (AIA) (1954-1955), gold medal recipient for distinguished service to the profession (1954), a member of the Committee on Accounting Procedure (CAP), an early member in the Accounting Hall of Fame (1960), and a writer and advocate for articulating the accounting profession's social responsibilities to the public as defined within the accounting framework of the late 1940s through the 1950s.

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It is valuable to look at his writings and consider his personal views on social responsibility as expressed in an audio-taped interview conducted in 1994.¹ Stans' description of social responsibility was based on a call for fairness in financial reporting through a greater standardization of accounting practices. He perceived that this approach would help reduce potential social class conflicts and labor strife in the U.S. economy arising from an underlying suspicion that the accounting profession endorsed practices supporting corporate interests over accurate reporting responsibilities to the general public.

Today the accounting profession has been beset by a number of scandals. Accordingly, it is worthwhile to record the historical insights of an accountant who faced his own integrity challenges and still strongly maintained his views on the accounting profession's obligations to society. This article reviews Stans' writings and the 1994 oral history interview in which Mr. Stans identified the role he played in developing practitioner-based arguments for expanding the accounting profession's public responsibilities. Prior to beginning this analysis, the advantages and pitfalls of an oral history methodology will be briefly considered.

ORAL HISTORY METHODOLOGY: ADVANTAGES AND PITFALLS

The primary resource for this paper was the 1994 oral history interview with Maurice Stans. Such an oral history can be considered a record of "personal reminiscences that are of historical significance focusing on impressions, attitudes, feelings, and descriptions, rather than facts" [Lamour, 1994, p. 2]. As with any research model, there are advantages and pitfalls to be considered when using oral history.

Academic support for oral history has evolved as it supplements written records with a rich verbal account of an event or events [Zeff, 1980; Collins and Bloom, 1991]. Others have argued

¹The oral history interview was conducted over a two-day period by the author at Mr. Stan's home in Pasadena, California on July 20-21, 1994. The questions covered a number of topics related to Mr. Stans' work as a practicing accountant. The only restriction on the questions was that they would not deal with Watergate. The questions were not submitted to Mr. Stans in advance of the interview, and the direction of the discussion was open-ended. The audio-taped interview was transcribed into a 79-page oral history. After the interview, a copy of the transcription was sent to Mr. Stans. That copy now resides in the Minnesota Historical Society in St. Paul. The oral history is available from the Minnesota Historical Society in St. Paul, Minnesota or from the author.

that the purpose of oral histories is to “problematize and contradict the traditional stories of accounting” [Hammond and Sikka, 1996, p. 81]. The latter view considers oral history as a means to show how the official written record of events can cause more extensive societal effects than might initially appear. This oral history collection corresponds more to the Collins and Bloom model.

The problems that can arise from an oral history interview occur when the interviewer injects his/her preconceived ideas into the interview, creating a bias in the questioning that can skew responses toward the interviewer’s point of view. Another difficulty arises if there is no rapport between the interviewee and interviewer, thus decreasing the candidness of the responses [Collins and Bloom, 1991]. Therefore, the interaction before, during, and after the interview are as important as securing consent for the interview. None of these issues arose in the Stans interview.² Thus, the current paper combines the candid recollections of Maurice Stans about his work in the accounting profession with an analysis of his published work on social responsibility.

STANS’ ENTRY INTO THE ACCOUNTING PROFESSION AND GOVERNMENT SERVICE

Maurice Stans was raised in the small town of Shakopee, Minnesota before beginning his accounting career at age 20 with Alexander Grant & Company in Chicago. Eventually, he worked his way up to become senior partner. In 1953, his firm was working on a consulting assignment with the U.S. Postal Service. As a result of that job, Stans left his position in 1955 to begin his career in government service in the U.S. Post Office as deputy postmaster general during the Eisenhower administration.

During Richard Nixon’s run for governor of California, Stans served as his finance chairman. In 1968, he chaired Nixon’s Election Campaign Committee, and later during the campaign became chair of Nixon’s Finance Committee. After the election, Stans was named commerce secretary in Nixon’s cabinet, but he resigned in 1972 to become chairman of the Finance

²Prior to conducting the interview, the author attended an oral history seminar conducted by Charles T. Morrissey, a nationally renowned oral historian. Morrissey’s oral history workshops, conducted throughout the U.S., deal with the methodology of oral history interviewing. The Morrissey method was used in the Stans interview.

Committee to Re-elect President Nixon and chairman of the Republican National Finance Committee. In 1973, he was indicted in the Watergate scandal but was subsequently acquitted of those charges.³

Before beginning his government service, Stans spent 27 years directly involved in the accounting profession. His concept of professional responsibility as reflected in his writings was strongly influenced by the social and political issues of the era.

THE SOCIAL AND POLITICAL BACKGROUND OF THE ERA

From the early 1930s to the mid-1950s, a social and political upheaval occurred in the U.S. This time period began with an economy in virtual collapse as almost every bank closed in 1933, and Americans beginning to question the principles of democracy, capitalism, free enterprise, and individualism upon which the nation was built. Growing out of the economic turmoil, American business found its place in the country's social fabric as overseers of commerce undergoing enormous change. Businessmen witnessed new political threats to the American system of government, labor strife increased as unions grew in size and powerful labor leaders were elected to represent their members, and new social legislation was enacted to protect the public from abuses of the past.

The U.S. reacted to the financial turmoil of the 1930s with new legislation to help solve the economic problems of the period. Such legislation provided stronger federal oversight of economic activities. In 1933-1934, the Securities Acts were passed, and the Securities and Exchange Commission (SEC) was established with regulatory powers over Wall Street and the accounting profession.

Workers were given substantial collective bargaining power in 1935 with the Wagner Act. In 1938, the Fair Labor Standards Act set a minimum wage of 25 cents per hour and a maximum work week of 40 hours. During World War II, labor-management disputes were controlled through no-strike pledges in support of the war effort. After the war, labor-management relationships became bitter again. During 1945 and 1946, there were numerous crippling strikes in the automobile, coal, and railroad industries. During 1946, 5,000 strikes involved 4.6 million work-

³Although Mr. Stans was indicted for perjury and obstruction of justice in 1973, he was acquitted of involvement in the Watergate scandal in 1974 [*Columbia Encyclopedia*, 2005].

ers.⁴ The United Mine Workers under John L. Lewis instituted one such strike in 1946 that had the potential to shut down businesses, stall World War II recovery in Europe, and deny warmth to American homes heated with coal. With this new political power, labor unions began demanding that corporate financial records be opened for scrutiny during contract negotiations.

These changes in the corporate regulatory and political environment began having an effect on the role of the accountant. With the passage of new financial market and reporting legislation, it became important for businesses to demonstrate that they were complying with the new rules. Consequently, the obligations of the accountant began to extend beyond the traditional role of responsibility only to corporations. Since the terms "independent public or certified accountant" had found their way into the Securities Act of 1933, accounting responsibilities had now expanded with obligations to the public sector.⁵

New practice guidelines were also developed for the accounting profession. Statement on Auditing Procedures (SAP) #1, *Extensions of Auditing Procedures*, was passed in 1939 by the AIA largely in response to the audit failure at McKesson & Robbins Company featuring fraudulent inventory and accounts receivable.⁶ SAP #1 required auditors to be present when inventories were counted and to conduct a confirmation of receivables.

The standardization process in auditing and accounting practices did expand with a number of new Accounting Research Bulletins (ARB), Accounting Terminology Bulletins, and SAPs. However, standardization moved ahead only slowly.⁷ Within this political and economic environment, Stans began to write about social responsibility.⁸

⁴"For example, in November 1945, the 180,000 members of the Auto Workers at General Motors struck for 113 days. In 1946, national strikes crippled the soft coal industry and the nation's railroads. That year there were a staggering 5,000 strikes, involving 4.6 million workers" [American Bar Association, 1995, p. 19].

⁵The Securities Act of 1933 deals with the certification of financial statements. Yet, the meaning of independence, as mentioned in the Act, would not be more fully addressed until the 1960s and 1970s.

⁶The fraud resulted in \$19 million of fictitious receivables and inflated inventory; the latter supposedly stored in Canadian warehouses (Carey, 1970; Goelzer, 2003).

⁷For example Previts and Merino [1998, p. 304] observed that CAP "had done little to promote uniformity before the war."

⁸His major publications on this topic were written in the period from 1947 to 1955 at which time he began his career in government service.

A SOCIAL RESPONSIBILITY PERSPECTIVE: THE CALL FOR UNBIASED REPORTING

An underlying argument about societal responsibilities is that no group can survive if it simply pursues its own interests without considering the consequences of its actions on society [Linowes, 1974; Committee on Social Measurement, 1977]. For the accountant, early definitions of social responsibility were viewed as professionals doing good work for clients. This perspective did not include measures of general human well-being, such as environmental effects, social accounting, or the impacts of business on local health and housing. Awareness of these issues began to develop in the late 1960s through the 1970s [Colantoni et al., 1973; Epstein et al., 1977].

Early views were more professionally introverted, linked to the avoidance of questionable practices that would reflect badly upon the profession in regard to tax preparation, for example, as noted by accounting practitioners in the *Journal of Accountancy* [Joplin, 1919; Richardson, 1919]. Other accounting authors wrote about the accounting profession's public role. Rose [1923, p. 337] observed that "the accountant must be prepared to fulfill his duties and obligations, not only to his clients, but also to the public," but this role was not fully defined. Another view on public responsibility was voiced by Clark [1923], a well-known economist. He believed labor's miseries during economic downturns could be mitigated if factory accounting methods were revised. He argued that charges for the social costs of labor needed to be forecasted and added to factory overhead as a new fixed cost.⁹

Auditors' public responsibilities were perceived as transcending the mathematical accuracy of the financial numbers to determine the true state of affairs of the organization under audit, but there was little call for standardization of accounting practices. The institutionalist writings of DR Scott during this period described accounting changes as part of a continuing and fluid cultural evolution or social process based on objective rather than subjective thinking [Scott, 1931]. Limperg [1932, p. 19] also viewed the audit in an evolutionary context. He wrote

⁹Clark was concerned with labor's suffering during downturns in the business cycle. He thought revisions in accounting practices were needed to allow labor costs to become part of factory overhead charges to be used subsequently by managers to moderate the effects of idle capacity and unemployment during economic downturns. Current employer payments to unemployment compensation funds are an implementation of Clark's ideas.

about the obligation of the accountant to “carry out his work in such a way that he does not betray the expectations which he evokes in the sensible layman.” Littleton [1933, pp. 267, 271] mentioned the “social interest” and, within that context, discussed the evolutionary rather than the revolutionary nature of change in the accounting profession.

In a 1930 injunction, issued by the Court of Common Pleas against the merger of Bethlehem Steel Corporation and Youngstown Sheet and Tube Company, the obligations of the accounting profession to the general public were identified as a central issue [Editorial, 1931, p. 86]. After commenting in the decision on the need for uniform standards of accounting to allow stockholders to accurately determine whether the offer from Bethlehem Steel was fair, Judge Jenkins went on to state:

I am further of the opinion that directors, shareholders ...should have a clear, explicit explanation of the accounting facts...which...will enable the ordinary reader, without hiring a technical interpreter, to determine the actual state of the company's business....Corporate statements and reports are for the information of the laymen.

In the same editorial section, A.P. Richardson, the editor of the *Journal of Accountancy*, described this statement as the “depth of the morass” and called uniform rules of reporting impractical.

Later writers wrote about a general public interest the accounting profession represented within the economy, but they did not correlate this public interest with accurate financial reporting based on generally prescribed methods [Wilcox, 1939]. Scott [1940, p. 508, 1941] wrote of “a vision of social responsibility” and expressed his concern that accounting practices needed to provide fair representation to all interests. Paton and Littleton [1940] wrote about the social importance of accounting to the flow of capital, but did not mention social class issues. All these views predated Stans’ writings. Although significant in other ways, these observations did not combine the concepts of social responsibilities, more uniform accounting standards, and societal class conflict as characterized Stans’ writings a few years later.

Citations in Stans’ writing help identify supporting sources for his ideas on social responsibility. Beginning in the late 1940s, an underlying reference in Stans’ arguments regarding social responsibility came from ARB #1 [AIA, 1949, p. 1] and its

reference to the social purpose of accounting.¹⁰

The committee regards corporation accounting as one phase of the working of the corporate organization of business, which in turn it views as a machinery created by the people in the belief that, broadly speaking, it will serve a useful social purpose. The test of the corporate system and of the special phase of it represented by corporate accounting ultimately lies in the results which are produced. These results must be judged from the standpoint of society as a whole – not from that of any one group of interested parties.

Although not generally called “social responsibility” by the practitioners of this time period, there were two general views of the profession’s responsibilities. One view held that the accountant’s role was to serve the client professionally. In such cases, the accountant acted as the client’s advocate in financial matters. A second view considered the accountant’s obligation to the client to be mitigated by a duty to act in good faith to and to serve the greater good of the general public. Stans’ arguments supported the latter view. The belief that accounting practices should not support any one group of interested parties was repeated in Stans’ writings and speeches throughout his accounting career. He believed that expanding prescribed accounting practices served as the means for implementing accounting’s social responsibility to the public, not just the client or investors.

LABOR UNIONS AND FINANCIAL REPORTING

As noted, the period immediately after World War II was characterized by high levels of labor unrest in the U.S. Labor leaders and their advisors began using corporate financial reports to determine the share of a company’s resources that could reasonably be expected to support wage increases for union members. As they reviewed the methods used by the accounting practitioners in preparing these financial reports, they became suspicious of the accounting practices being followed.

Barkin’s [1951] views can be considered representative of the labor movement’s perspective toward financial reporting during this period.¹¹ He wrote that financial statements which

¹⁰See Stans [1948, 1952, 1953a, b].

¹¹Solomon Barkin was a noted labor union activist, and in 1951, he was the director of research for the Textile Workers Union of America.

do not clearly disclose total income and benefits transferred to owners and managerial interests cannot be trusted by workers and unions.¹² From his perspective, it was important to have financial statements that accurately showed the amount of income available for distribution to the factors of production. For collective bargaining purposes, he believed the influence of the separate entity and the conservatism principles biased financial reporting towards owner/managerial interests over those of labor. These underlying principles were seen as resulting in overly cautious reporting that unnecessarily reduced owner profits and put labor at a disadvantage in collective bargaining. Barkin [1951, p. 1196] believed that the accountant needed to “define the biases and distortions introduced into the recording by the power which management has hitherto exercised over accounting.” Stockholders, creditors, directors, and executive managers were identified by Barkin as the four distinct entrepreneurial groups within the corporation who act as providers of either capital or managerial talent. After making this point, he described accounting practices related to these four groups that distort financial reporting. For stockholders, many of the recognized costs of stockholder operations (e.g., meetings, legal fees, etc.) are withdrawals from residual earnings and not reductions in current earnings. For creditors, their interest payments should be recognized as a reduction of the company’s net worth, not an expense on the income statement. Payments to directors should also not be recognized as charges against income. Executive managers act as replacements for the single proprietor; thus, any payments to them, such as bonuses or expense accounts, should not be deducted from income but should be recognized as deductions from retained earnings. He believed that the current method of preparing financial statements allowed companies to siphon off profits to their affiliated companies or to burden one enterprise with the expenses incurred by an affiliate. Barkin called for additional reporting to the SEC to allow for the disclosure of such information. He argued against any accounting methods which would tend to build reserves for future losses.¹³

¹²Barkin developed support for his arguments against conservatism by citing Paton [1948] and Gilman [1939]. It should be noted that Gilman’s arguments on conservatism in turn drew support from a Dohr [1938] article. As will be seen, Dohr was also a source cited by Stans as well as someone who opposed Stans’ call for stronger standards to control accounting procedures.

¹³He cites any inventory valuation method not based on cost as recognizing inventory losses before the inventory is sold. FIFO, LIFO, normal stock, market,

John Carey [1951, p. 165], executive director of the AIA, commented on Barkin's article in a *Journal of Accountancy* editorial, describing Barkin's ideas as another example of special interest arguments that would neither help stockholders or potential investors nor be useful to taxation or regulatory authorities. Rather, Carey believed accounting should focus on a "fair presentation of income from all points of view."

Barkin was not the only labor activist calling for changes in accounting practices. Pillsbury [1954] reports on a national study of union research directors, citing their suspicions regarding the establishment of contingency reserves, inflated depreciation reserves, the LIFO inventory method, and inventory reserves.¹⁴ These union research directors believed corporate profits should show the amount of resources available for distribution to land, capital, and management.

STANS' RECOMMENDATIONS FOR CHANGE

Stans began to express his own concerns about ongoing labor-management conflicts.¹⁵ Stans drew support for his opinions about these clashes from Ruttenberg [1950], Slichter [1951], and Dohr [1952]. Dohr's arguments in his 1952 article were used by Stans to reinforce his own ideas on the importance of avoiding class conflicts.¹⁶ Dohr articulated a conservative vision for the American economy that focused on a utilitarian philosophy for

and standard cost are all considered inventory cost-flow assumptions that distort company profits. These methods are used to protect current property rights and are based on assumptions of future business expansion. Such assumptions about future changes are not likely to be shared by all the factors of production in the same manner as they are being currently distributed.

¹⁴These concerns were also found in the accounting literature. In the *Nature and Purpose of the Income Statement*, the Subcommittee on the Income Statement of the CAP reported that accounting procedures could as easily cause the understatement of net income as its overstatement. Thus, any proposed solutions to accounting issues need to consider how they create both effects [AIA, 1945].

¹⁵Stans acted as president and director of Moore Corporation, a Joliet, Illinois stove manufacturing company, from 1938-1945. The company's workers were represented by the Iron Molders and Foundry Workers (IMFW) Union. Stans describes being inducted into the IMFW as an honorary union member in 1943 and retaining his union card from that date onward [Stans, 1995].

¹⁶See Stans [1952, 1953a, b]. Dohr was an accounting professor, practitioner, and director of research at the AIA. His publications included books and numerous articles in the *Journal of Accountancy*. It is interesting to note that Dohr coauthored an article with George O. May challenging the previously published Stans-Goedert's article calling for stronger rules of accounting practice [May and Dohr, 1955]. This debate is discussed later in the paper.

societal good. As suggested in ARB #1, there exists a need for cooperation among all economic groups. It is disadvantageous when a labor force adopts monopolistic practices in an attempt to raise wages.

As noted previously, labor unions were not hesitant to express their opinions about factors affecting their economic well-being, such as the reliability of corporate financial statements used in labor negotiations. Stans' [1947a] paper on industrial peace uses sources from the United Mine Workers, *The Truth about Fake Company Financial Statements*, and the United Electrical Radio & Machine Workers of America, *How Corporations Conceal Profits*, to illustrate labor's distrust and doubts about financial reporting. To support his perspective on the need for accurate financial reporting, Stans also built upon Ruttenburg's [1950, p. 14] paper, *Labor Views of Financial Statements*.¹⁷ Ruttenburg, a labor activist, argued that the current format being used to prepare financial statements is designed "to fool the public." He believed such accounting reports contributed to the climate of labor unrest. He considered the accounting practice of setting up reserves for price increases and decreases simultaneously was only used to deceive labor unions about the true level of corporate profits. With better financial reporting, Ruttenburg hoped strikes could be diminished.

Stans' articles drew inspiration from Sumner Slichter's [1951] book, *What's Ahead for American Business*.¹⁸ Slichter, who favored entrepreneurship, was a conservative labor economist who wrote about labor issues such as employee turnover, unions, and unionization. Stans synthesized Slichter's arguments in supporting the American economy against economic systems that had a propensity toward communism or socialism. Slichter believed he was witnessing a fundamental change in American business as labor's increasing influence diminished management's power in the workplace.

Stans [1947b, d] wrote and spoke about the need for "industrial peace" and the importance of the accounting profession's role in serving the public interest. He believed that responsibility to the public mandated unbiased financial reports, ones for

¹⁷See Stans [1950b, 1956]. Ruttenberg worked for the Congress of Industrial Organizations (CIO), and at one time, he had been a CIO labor organizer. In 1950, he was the director of the Department of Education and Research at the CIO.

¹⁸See Stans [1952, 1953a, b]. Stans was familiar with Slichter's work as early as 1949 when he had cited per capita statistics developed by Slichter as a source of support in his writings [1949a, c, d].

all groups, not just stockholders or potential investors. Such reports would allow others, such as labor's representatives, to view financial reporting as a fair process. Stans [1947b, p. 28] mentions the "proportionate distribution of the excess of venture income over a measured return to each economic partner."

Stans [1953b] went further in outlining a method for a more equitable distribution to labor, capital, and management with social-accounting financial statements. He describes an income statement in which "business expenses" are initially deducted and then distributions are made to labor, capital, and management as a means of recognizing the cooperative nature of these groups. In expanding on this approach, he suggests developing a pre-negotiated social budget for the division of profits. The budget would be based on a formula for the "social division" of income to all groups involved in the generation of company profits. Again, he stressed the accounting profession's role in making financial reporting understandable, trustworthy, honest, consistent, complete, and respected.

Stans [1994 interview] felt financial reports could contribute to industrial peace by helping to prevent general public suffering arising from devastating and violent labor strikes and political threats to the government:

Those figures were important in a great many ways besides security holders too, for example, labor depended on their earnings reports of companies. And, when they found out what was going on, they became very critical of earnings reports. Less and less dependent on the results of those reports in labor negotiations. The company said we had a bad year, last year we lost 50 million dollars. Yeah, how much did you take out for future reserves, future contingencies, or how much did you bring in to pad it by improving the earnings, by that process. Well, that was my conception that – and I made one particular speech on it at a meeting in Minneapolis for the Institute, yeah, on carrying that social responsibility business still further by seeing that financial statements in all respects were as accurate and as comparable as possible for the interest in labor that had to deal with negotiations on wages.

As later stated in his book *One of the Presidents' Men* [Stans, 1995, p. 38], he believed that accounting practices at the time were "inadequate for a real public understanding of the facts of business." His perspective for more standardization was based

on his worry over fairness and conflicting economic interests.¹⁹ Stans believed that without clear reporting, accounting served as a tool for those who wanted to distort the general public's view of the American economic system. Stans [1947b, p. 26] describes the job of the accountant as:

...the development of independent, truthful, and understandable reports of the facts of business operation for labor and the public, and in giving authenticity to such reports.

Stans' [1947, p. 26] speeches and writings represent the views of a recognized accounting practitioner calling on the profession to improve its reporting practices in order to encourage industrial peace: "The honest, independent representations of the public accountant, applied to information fully and clearly presented, can eliminate much of labor's distrust of management and management's distrust of labor." Stans [1947a, p. 25] felt that "the public accountant has thus far failed to establish his independence in their eyes."

He was one of the early practitioners calling for the reform of accounting standards as a necessary part of the need to avoid social class conflicts as typified in labor-management disputes. In the interview, he stated:

Furthermore, I took the front steps, pretty largely, in criticizing the quality of standards and workmanship of the profession in a series of articles in the *Journal of Accountancy* that you may have seen – even to the point of drawing fire on me, from some of the old timers in the profession, who thought that accounting would be better served...operated and would better serve the public if given a lot more freedom of choice on the ways to make entries. I felt very strongly that that was not right and I defined it as a social responsibility and wrote several articles on it.

In 1947, he first used the term "social responsibility" in his writings.²⁰ At that time, Stans [1947b, p. 35] noted:

¹⁹After World War II, Storey [1964] identified accountants' focus on social responsibility arising from three concerns. They were: (1) meeting the reporting needs of others beyond the traditional groups; i.e., investors, management, and creditors; (2) a growing third-party emphasis on accounting independence; and (3) improving the financial reporting by decreasing the discretionary differences in reporting practices.

²⁰Writing in 1943, Stans [1943, p. 239] used the term "social responsibility" in his first published paper on small businesses' war obligations, but he had not

...the art of accounting is today a social force and those who practice the art must assume social responsibilities. To the accountant, therefore, this implies not only the performance of all activities in a manner consistent with the public interest, but also a continuing aim to expand the field of service in all ways in which the well being of the economy can be advanced.

He believed the accounting profession's role was to help minimize social problems by preparing public financial reports that clearly showed how the wealth of the production process was fairly allocated among the factors of production. He worried that the general public was suspicious of an accounting profession that appeared to be working with corporations to hide corporate wealth.

Stans derived many of his arguments from the American political context of the times. In a 1948 paper, Stans [1948, p. 100] referenced the social changes that have occurred in American society over the period from 1928 to 1948:

...of the responsiveness of accounting to social forces. Each of these development [changes in accounting practices] came as an acknowledgment that the previous practices were not wholly truthful or adequate in reports of stewardship.

He believed accountants were "to be employed in the full recognition of a primary responsibility to the broad public" [Stans, 1948, p. 99].

During this period, it was a common accounting practice to smooth company earnings with a variety of techniques. These included directly crediting or charging earned surplus (retained earnings), recording stock discounts, recognizing depreciation when "justified" by revenues, using reserves for possible price increases or decreases, reporting net income before depreciation deductions, inadequately reporting stock options resulting in the dilution of stockholder's earnings, and making asset revaluations without strict adherence to cost principles. Income appropriations and charges from questionable future event income were recorded. There were large inconsistencies in calculating net income among similar companies. Tellingly, Stans' writing emphasizes the need for unqualified public confidence in the

yet applied the term to the accounting profession's responsibilities to the public. In the paper, he states: "But to what extent will economic regimentation and the growing recognition of *social responsibility* impose a continuation of such measures as wage and salary stabilization...."

accounting profession's reporting practices through the curtailment of these practices. He considered accounting to be an art where judgment should not be circumscribed by rules, but where such judgment should not be used "in the narrow interest of [one] social structure to the detriment of others" [Stans, 1948, p. 106]. Stans [1948, p. 105] argued that accounting practices should be used in a manner to improve the general public's understanding about the distribution of corporate resources and rewards.

Accounting presentations must be tailored to the public interest by means of codified standards of adequate disclosure which recognize the invalidity of any type of statement which fails to tell a full and clear story.

Stans argued that the public's conceptions of financial reports as confusing and untruthful only poses additional threats to American free enterprise. During this period, American society was facing some of the biggest threats of the Cold War in Eastern Europe and China. It was a time when the House Un-American Activities Committee and McCarthyism heightened concerns about Communists in the U.S. Beginning in 1947, Stans [1947a, p. 28] saw growing political threats and worried about the need for industrial peace:

Except for those who would substitute a Marxist form of government, Americans believe that labor should have a fair share of the productive output, which means with due respect also to a fair share to capital and management. Unless labor seeks the disillusionments of Communism or Fascism, it must accept that as a premise.

Stans' [1949b, p. 3] concerns about both socialism and communism continued to be expressed in his writings:

In the search for social and economic adjustment, the world's once most powerful empire (United Kingdom) has turned to socialism. Today's most challenging world power (Soviet Union) is sponsoring an uncertain human equation called communism...even in our own country there is a lacking of sureness, a positive confidence of the outcome of the future.

He argued that accounting must help to instill confidence in the capitalistic system that had been under stress and change since the days of the Great Depression. Stans called for the accounting profession to view its link and responsibility to the general public as strongly as its link to corporate clients. The

underlying clashes between the policies of Communism and the free-enterprise system framed the perspective taken in many of his articles [Stans, 1953a, p. 19]:

...the major uncertainty about the course of accounting development springs from the threats of change in the political system. So long as a democratic form of government prevails, and retains with it a climate that encourages free enterprise and the profit motive, accounting will retain its full potential. On the other hand, a nationalization of a large segment of industry or finance could lead to the paralysis of accounting.

He went on to write: An even greater political change to some form of Statism or Communism in government would...further centralize decisions and reduce accounting to a matter of classification and summarization according to rule books and regulations.

Stans [1949d, pp. 466-467] continued his social responsibility arguments in a 1949 *Journal of Accountancy* article. Stans felt that if accounting's social responsibility obligations were recognized and acted upon, a means would be provided for correcting class-based economic disagreements, especially those arising from suspect financial reporting. He states that accounting "is the only common denominator available to solve the conflicting interests of capital, labor, management, and the public, within an economy." He describes financial reports as "social documents" [Stans, 1949c, p. 50], and accounting practices as being "developed from a type of free-hand drawing" [Stans, 1949b, p. 5].

Stans became a member of the CAP in 1943. His qualifications to several ARBs demonstrate his support for stronger rules in accounting practice. Stans' qualification regarding the potential for practice abuses in implementing ARB #27, *Emergency Facilities* [AIA, 1949, p. 226], is worth noting²¹:

²¹Stans served on the CAP from 1943 to 1948 and again from 1953 to 1954. He served on the Committee on Accounting and Terminology from 1953 to 1954. Stans registered dissents or qualifications on ARB #27, *Emergency Facilities*; #28, *Accounting Treatment of General Purpose Contingency Reserves*; #32, *Income and Earned Surplus*; #35, *Presentation of Income and Earned Surplus*; and #44, *Declining-Balance Depreciation*. He did not dissent on ARB #20, *Renegotiation of War Contracts*; #23, *Accounting for Income Taxes*; #24, *Accounting for Intangible Assets*; #25, *Accounting for Terminated War Contracts*; #26, *Accounting for the Use of Special War Reserves*; #29, *Inventory Pricing*; #30, *Current Assets and Current Liabilities: Working Capital*; #31, *Inventory Reserves*; #33, *Depreciation and High Costs*; #36, *Pension Plans: Accounting for Annuity Costs Based on Past Services*; and #37, *Accounting for Compensation in the Form of Stock Options*.

Stans feels that the application of individual judgment as to what is a 'special situation' [accumulated amortization or depreciation] could lead to abuses in practice.

The qualification shows his concern for the standardization of accounting practices. It is a strong dissent.

As a member of the CAP, Stans' dissent on ARB #32, *Income and Earned Surplus*, along with two other members, was based on reducing confusion for public users of financial statements [AIA, 1949, p. 265]:

...the so-called 'all-inclusive' concept...best serves the public interest because it is least subject to reader misinterpretation...surplus charges and credits...tend to hinder public understandability of financial statements.

ARB #32 is considered a first step in restricting credits and charges from being recorded in earned surplus. In dissenting with the ARB's conclusions, Stans felt this first step did not go far enough. Of Stans' four dissents or qualifications to ARBs, three dealt with what he considered to be the improper recording of income.

The argument for an all-inclusive income statement was also addressed in ARB #35, *Presentation of Income and Earned Surplus*. Stans' dissent, along with two other members, was focused on using the surplus (retained earnings) to record expenses and revenues directly. The dissenters argued that such expenses and revenues would be better represented on the income statement. They believed ARB #35 was inconsistent with previous ARBs and needed to be revised. Finally, in ARB #44, *Declining-Balance Depreciation*, Stans argued that all significant deferred income taxes should be recognized. He did not agree with the CAP's view that the time period to depreciation reversal was the key to recognition or non-recognition.²²

His activities on the CAP showed his support for the accounting profession's ability to police itself rather than in the government setting practice rules [Stans, 1995, p. 37]. He believed that the introduction of more standardized and specific accounting practices was a required sacrifice for the common good of all society. Writing in 1955, Stans [1955, p. 216] stated:

²²It is interesting to note that the 1958 revision of ARB #44 stated that, "recognition should be given to deferred income taxes if the amounts thereof are material" [AICPA, 1961, p. 2-A]. Thus, the time period rule was eliminated. At this time, Stans was no longer on the CAP.

I believe we will soon see a more comprehensive code of professionally developed accounting principles, further refinement of auditing standards, and greater uniformity in terminology and method of presentation of financial data.

Stans adopted a pragmatic argument linking the profession's future success with the profession's ability to make financial statements more understandable to the general public. Stans' pragmatic views correspond with the view of developing justice for all societal groups as a means of survival. His views encompass moral justice for "investors, bankers, the general public, labor unions, legislators, and government agencies" [Stans, 1995, p. 38]. He stated his concerns about the accounting profession's financial reporting in these interview comments:

And if you distort any one period by stealing and transferring into a reserve, some of the results of that period, you're not serving properly the public, stockholders, and those who have an interest in that earning power...

...labor depended on their [corporate] earnings reports...when they found out what was going on, they became very critical of earnings reports and less and less dependent on the results of those reports in labor negotiations.

Stans wrote to convince other accounting practitioners to adopt a broader societal view as part of their professional responsibilities, specifically to eliminate accounting practices that were misleading. In Volume 1 of the *CPA Handbook* [Stans, 1952, p. 14], he wrote:

In the hands of its experts, accounting can become an even more important means of creating understanding, confidence and rationality in economic affairs. In this prospect lies the real hope of eliminating the recurring dangers to the permanence of the American system.

After 1955, Stans turned his writing toward federal budget issues given his activities in Washington. Yet, in his 1962 keynote address before the American Institute of Certified Public Accountants' (AICPA) 75th anniversary meeting, he again made a call for social responsibility. This speech, published in *The Australian Accountant*, was titled *Accounting and Human Progress* [Stans, 1963]. The address highlights how the accounting profession can meet its social responsibilities to better the conditions of the people of the world. Again, Stans stressed the

need of the accounting profession to look beyond the techniques of accounting and commit to a larger role in strengthening accountability through involvement in public policy issues.

During the 1994 interview, Stans continued to associate professional accounting practice with social responsibilities. Here, he provides a definition of professionalism:

I think it's a situation when an organized group of people with professional type responsibilities and workloads actually organize themselves in such a manner as to standardize codes of ethics, principles, and methods of developing quality in order to better serve the public best. It's basically the development of a social consciousness and social responsibility within the work defined by the boundaries of the profession.

SIMILAR AND OPPOSING VIEWS

Stans' writings on social responsibility were not greeted with acceptance from everyone in the profession. His calls for better financial reporting were viewed by many as a direct criticism of accounting professionalism, and his call for the "development and use of a comprehensive code of accounting principles" [Stans, 1949b, p. 5] was considered a threat against the professional judgment of the CPA. Stans averred in his interview:

There were some of the firms—thought I should not in anyway talk to the public or write in a way which the public got a hold of it in a manner that was critical [to the accounting profession].

Looking back, I can see I was absolutely right in writing despite the fact that George May, one of the retired partners of Price Waterhouse, took issue with me...very strongly.

[The profession] did respond to all the things that I urged in those days...most of them were carried out under threat rather than by professional decision.

George O. May, a leading accounting practitioner, was a former chairman of the CAP and served with Stans from 1943 to 1945.²³ May had been with Price Waterhouse since 1897 and

²³George O. May was a senior partner at Price Waterhouse and a well-respected accounting practitioner. He was the first chairman of the CAP, and his influence was instrumental in formulating many of the early ARBs. He served on the CAP from 1939 to 1945.

a senior partner from 1911 to 1940. In 1934, he chaired the AIA's Special Committee on Co-operation with the Stock Exchanges. The Special Committee determined that a variety of accounting methods were inevitable in practice and suggested that only generalized principles should be used by the accounting profession. May believed in the subjective nature of accounting and that the judgment of the accountant in recording transactions was better than a strong set of standards. He believed that the accountant's primary obligation was to investors [May, 1933a]. May [1937, p. 425] subscribed to the belief that the "substance of the accounts may and often should vary according to the purpose for which the accounts are required." In this regard, the accountant had no obligation to disclose the nature of reserves in the accounts if there was no material distortion of earnings. May [1950b, p. 387] stated that "...no amount of standardization will either (a) make an understanding of the nature of accounting process less necessary to a proper interpretation of such determinations, or (b) convert those determinations into findings of fact." May's accounting background was British-based where questions of asset valuation and accounting procedure are largely in the hands of the auditors [Zeff, 1984].²⁴

May, a strong advocate for more voluntary accounting reforms and a supporter of individualized decisions based on practitioner's judgments, criticized Stans' 1948 and 1949 *Journal of Accountancy* articles. In particular, Stans' support for a set of authoritative standards did not find favor with May who preferred "intelligent variation" rather than the "wooden conformity" he saw in Stans' suggestions [May, 1950a, pp. 208, 210]. Further, May believed that it was unnecessary for the reader of financial statements to understand exactly "what was in the mind of the accountant on deciding...content and structure" of the income statement. May criticized Stans for suggesting that authoritative rules should be based on an external authority;

²⁴May was not alone in objecting to the institution of controls over accounting procedures followed by the accounting profession. A number of leading accounting practitioners were opposed to the development of authoritative accounting procedures that would impede judgment in selecting the accounting methods to follow. For example, Littleton [1934, p. 72] wrote:

Double entry is flexible enough to record and organize any data, and our present knowledge of uniform accounting systems is ample to permit the design of a variety of suitable mechanism. But accountants, better perhaps than anyone else, are aware of the dangers of over-rigid prescriptions; all business cannot be poured into a few uniform molds. Even different enterprises in the same industry cannot with equal economy follow identical accounting procedures.

i.e., “power” rather than the knowledge, experience, and reputation of the accountant. In a letter, published at the end of May’s article, Stans identified the primary difference of opinion as the ability of financial statement readers to understand “what goes on” [Stans, 1950a].²⁵ Again, Stans stressed a “social aspect” and a “social revolution” as reasons for adopting more standardized financial reports. Stans [1950a, p. 211] wrote:

...I plead for greater standardization, clarity, and comparability (in form and expression), that all may understand. To me, this is ‘usefulness’ in terms of society and at no cost to anyone.

Even before his debate with Stans, May [1943] had objected to authoritative standard setting based on a new social order or some sort of abstract justice. He felt these reasons were unjustified.

Stans and Goedert [1955], along with outlining their definition for the term “book value,” wrote about the importance of having an “authoritative and comprehensive definition” for book value within the profession. In response to Stans’ proposals, viewed by May as another call for standard setting by a higher authority, May and Dohr [1955, p. 47] wrote:

That concept is that in business accounting there is neither absolute rule nor anarchy but a system that has elements of stability and adaptability, and that stresses disclosure and significance – not strict uniformity.

Both May and Dohr had correspondingly strong opinions regarding the standardization of authoritative accounting principles. For example, Dohr [1942] had written that there are no “immutable principles” or system of accounting, but rather practice consists of determining the specific facts of the situation and then selecting the principles that apply.

Stans refers to Carey’s *Professional Ethics of Public Accounting* [1946, p. 7] as support for his views on unbiased reporting.²⁶ Carey, who served as executive director of the AIA, wrote that accountants must not “arouse a suspicion of lack of independence” or act in a manner that make the accountant appear

²⁵It is worth noting that Carey as editor of the *Journal of Accountancy* published nine letters in the *Correspondence, Letters to the Editor* section under the title “Many Accountants Approve Maurice Stans Ideas on Accounting and Free Enterprise.” Carey was a supporter of calls for more standardization in accounting practices.

²⁶See Stans, 1947a.

to represent conflicting interests. During the interview, Stans mentioned the support for his arguments that he had received from Carey:

... (Carey stated to me) "I think this is exactly what the profession needs. We need to push ourselves as a profession into doing things in a much better way...a more uniform way. I, as Executive Director of the Institute, I can't say that but you certainly can. I hope you will." He encouraged me several times along the way to do something more in that field. The fact that happened that way, with him, leads me to believe that there weren't very many others geared up to write about it at that time.

Stans [interview, 1994] believed that his position regarding standardization and the social responsibilities of the profession came to be generally accepted:

And I must say I made some enemies in the profession by picking on that [reserve accounting] as an example of an unfulfilled social responsibility and that took awhile for me to live it down. If the situation hadn't caught up with my ideas, I think that I would never have gotten elected President of the Institute.

Stan's position on the need for more accounting standardization did not alienate members of the AIA as can be seen in 1954 when he was awarded the gold medal for distinguished service to the profession and contributions to accounting literature.

Stans continued to work for a stronger standardization of accounting principles by serving as one of seven members on the AICPA's Special Committee formed in 1964 to study how departures from the Accounting Principles Board (APB) Opinions should be handled.²⁷ The Special Committee's recommendations and subsequent AICPA membership vote substantially strengthened the APB's role in setting authoritative standards and helped to eliminate "unnecessary obstacles to comparability" [Carey, 1970, p. 144].

CONCLUSION

Issuing untrustworthy financial statements does have a significant economic and social effect on public perceptions of

²⁷Prior to the formation of the Special Committee, APB Opinions had been considered important, but not important enough to override an auditor's best judgment as to how an accounting event should be reported.

the business environment. Stans' concern for better accounting standards was framed within arguments of social responsibility to the public based on preventing class conflicts as well as serving the self-interest of the accounting profession by curtailing further governmental interventions.²⁸ Both these concerns combined under his definition of social responsibility.

Although there were others who called for uniform financial reporting, Stans was the first practitioner to associate fair reporting with social responsibility founded within a context of class conflict. Stans believed it was a mistake for the accounting profession to continue preparing financial reports without clearly prescribed practice rules since this approach created public suspicion that accounting methods favored corporate interests. Underlying his concerns was labor's growing political power as a threat that could justify the enactment of congressional legislation to control accounting practice. He saw social responsibility as the profession's obligation to itself as well as to the country in a broader sense.

In the 1994 interview, Stans summarized his contributions to the accounting profession:

I think the major contribution that I made to the profession...was the fact that I singled out this issue of accuracy of financial statements. If we were a professional organization we had to have standards of performance, standards of ethics, standards of...many other qualifications. And we weren't providing that. The fact that I stuck with that for several years and pointed out the risk of government intervention...I think that was, as least as I saw it, the most valuable thing that I could have done for the profession.

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²⁸Stans [1955, p. 219] believed in the need for authoritative accounting standards. His 1994 interview statement about his contribution to the accounting profession is remarkably similar to his writings from almost 40 years earlier:

New methods of reporting and improved techniques, accompanied by a high standard of ethics and responsibility, will generate confidence in the use of accounting data in resolving class differences.

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INTERFACES

STRAW MEN AND OLD SAWS – AN EVIDENCE-BASED RESPONSE TO SY & TINKER’S CRITIQUE OF ACCOUNTING HISTORY

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Abstract: In a recent *Accounting History* article, Sy and Tinker (S&T) [2005] critique accounting history for its support of “archivalism” and empiricism in light of irrefutable arguments against these “antiquarian epistemes.” While tempted to lambaste S&T’s article as unfettered social activism rather than evidence-based historical inquiry, we focus instead on the more substantive questions S&T raise. We initially summarize their essential arguments, although some of the statements they make are contradictory in nature. We then discuss fundamental issues and genuine challenges to accounting history posed by the post-Kuhnian critique that S&T and others represent, as well as the nature and purpose of historical enquiry. We reviewed the accounting history journal articles published between 2001 and 2005 and use our findings to evaluate the broad assertions that S&T make about accounting history. We conclude that S&T’s critique is unwarranted and unjust, especially when the subject matter of the most recent accounting history articles is considered.

INTRODUCTION: SY AND TINKER ASSERTIONS

Sy and Tinker (S&T) contend that Thomas Kuhn’s work on the construction of theory in the natural sciences has created a seismic historiographic shift that has not been acknowledged by accounting historians, whom they characterize as “archivalists” because of their unwavering belief that historical data

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are capable of objective verification. According to S&T, Kuhn [1970] has proven that empiricism is defunct, notwithstanding that the frauds S&T cite as proof of history's inherent fallibility were themselves refuted by evidence, and that the historical materialism that they promote as an alternative to archivalism also requires evidence before one can accept it as an historical explanation of social conditioning.

S&T also allege that the Kuhnian revolution has been successful among scientists and non-accounting historians alike, and that by basing their conclusions on ineffectual methodologies (i.e., historical evidence and the principle of falsification), accounting historians are in a serious state of denial. S&T describe this alleged widespread acceptance of the fallibility of empirical research as the "triumph of history over philosophy," although they also criticize accounting historians for not engaging with philosophy in the first place. Furthermore, accounting historians continue to address the wrong issues (i.e., the great, white, Eurocentric men of the past), and most importantly, do not embrace an unequivocal moral stance vis-à-vis their subject matter.¹ For example, S&T [2005, p. 53] write:

Specifically, we provide a series of examples to remind the reader of the vulnerability of Empirical Science to ideological partisanship; not only in establishing the verity of some ideas, but also in demonstrating the falsity of others. The implication is not merely about distortions of the truth, but more importantly, the need for greater social self-awareness by accounting historians, such that they systematically grasp the terrain in conflict situations, and make an informed but inescapable choice about which side to ally their history. Such an [sic] socio-historical episteme is diametrically opposite to the philosophically naïve objectivity that under-girds much archival research.

S&T similarly contend that by focusing on the wrong issues, accounting historians have ignored the repressed voices and social conflicts of the past, the inference being that when they have taken sides, they have allied with the wrong party. As a result, S&T argue, conservative viewpoints dominate the academy, and those with a more progressive spirit have been unable or are unwilling to use the history of accounting to help liberate the world of the present.

S&T infer that a belief in the inherent objectivity of fac-

¹See Sy and Tinker [2006] for a more detailed discussion of Eurocentricism.

tual evidence is the cause of accounting history's misplaced allegiances. Although they do not explain why specifically, one must presume it is because historical truths for post-Kuhnians are always relative to a particular time and place. Following Kuhn, this is the time and place where the historian is situated since Kuhn is writing about the manner in which the dominant scientific paradigm of the day colors the choice of topic and interpretation of evidence [S&T, 2006]. This would, for instance, help explain the Eurocentric nature of accounting history as well as its male gender bias and what S&T regard as an obsession with the great persons of the past and double-entry bookkeeping. Hence, S&T [2005, p. 49] argue that "any assertion as to the verity of a statement of fact...requires a philosophical warrant." Any definitive statement about the past is entirely unsustainable because it derives from an historian's epistemic, empirical selection of particular factoids among a set of competing evidential data. Thus, while accounting historians would like to consider themselves to be even-handed, they are unable to replicate an objective past due to the inherent bias and subjectivity of their search and discovery process.

Given this unavoidable bias, S&T contend that accounting history would be better served if accounting historians adopt an unequivocal moral stance vis-à-vis their particular historical episode. Thus, they should examine the context and conflict associated with the episode (S&T's emphasis on conflict is presumably a reflection of the importance of class conflict in Marxist history), evaluate the arguments of the combatants, and openly promote the socially responsible position. According to S&T [2005, p. 53], a failure to advocate is not only a missed opportunity for accounting history, it has "undermined its authority to address pressing problems in accounting practice and theory today."

S&T are equally fervent about the outcome of Kuhn/Popper debates concerning the philosophy of history. These debates have incorporated the relationship between evidence and reality, the inability of competing theorists to communicate with one another, and the nature of scientific observation, explanation, and prediction. S&T collapse the debates to "the meaning of truth," and extend Popper's falsification (refutation) theory to the work that historians undertake. For example, S&T [2005, p. 51] write:

Refutation itself was also a flawed project for the historians. Their criticisms focused on the tenuous link between Theory and Reality. Ascertaining the meaning

of empirical observations is always problematic. Observations are invariably mediated by senses and measuring instruments, and therefore all results are contingent onto two theories – not one – the primary theory of interest, and a second (measurement) theory about how a mediating device operates.

The implication is that we can “never be certain” to have refuted a primary theory given that our “observation theory may be faulty” [S&T, 2005, p. 52], even though, as Bryer [2006, p. 552] has pointed out, such a dichotomy does not accord with Kuhn’s [1970, pp. 10-11] own view that “law, theory, application, and instrumentation” – “what questions may legitimately be asked... and what techniques employed in seeking solutions” [Kuhn, 1970, p. 5] – cannot be separated.

Thus for S&T, perception trumps reality every time, a view which directly links Kuhn’s historical relativism to Marx’s historical materialism. Historical materialism alleges that the social existence of men, which is in turn a product of the material conditions in which they live, determines their whole consciousness, their ideas, and the way they see the world. Historians following an historical materialist approach would therefore be a) very aware of the social context of the time; b) recognize that their own ideas are also social constructions; and c) since all ideas are social constructions, accept there is no point in attempting to remain neutral. According to Marwick [2002, p. 4], “Marx criticized the philosophers for seeking to understand the world, when, he declared, the problem was to ‘change it’.”

S&T advance historical materialism as a far better *modus operandi* for accounting history than the accounting “archivalism” they disparage.² In essence, S&T call for historians to throw away the scale, choose sides, and enter the fray, presumably on the side of the vanquished, impoverished, and socially repressed that accounting history has, allegedly, hitherto ignored, rather than to continue their support of white-male, Eurocentric propertied interests – the purported subject of mainstream accounting history.³

²Although S&T never specifically define the word “archivalism,” they seem to equate it to “empiricism,” a word that signifies the primacy of evidence in validating or refuting a particular theory.

³S&T [2005, p. 47] speak thusly about mainstream accounting history: “Despite the Kuhnian Revolution, archival antiquarianism reigns supreme. This regime survives in a North-Korean-like insularity, by combining a self-referential closure using the Great Men of accounting with a refusal to engage a broader literature in social history.”

Unfortunately, S&T do not provide criteria that would help historians (or the subjects of the historical inquiry) make the correct choice when the distinctions between good and evil are not self-evident nor do they provide specific examples of where accounting historians have made the wrong choice. Instead, they generally argue that the historian “should align herself with the side judged to be morally and socially appropriate” [S&T, 2005, p. 49].

In the second part of their paper, S&T describe the historical frauds that were perpetrated by Copernicus and the hoaxers who created the Piltdown Man, examples they would surely acknowledge are quite far afield from the domain of accounting history. S&T describe and then critique these episodes as examples which show the limitations of historical evidence. Fraud is a poor yardstick for judging whether history is capable of objective verification, given that subjectivity in history usually arises not through manipulating the evidence but through conflicts of interpretation. S&T conclude by calling for accounting historians to produce “relevant history” by addressing the moral quandaries of the present, such that history “becomes an emancipatory exercise, where knowledge of the past becomes an instrument of edification and ennoblement; not subjugation” [S&T, 2005, p. 63].

In the balance of our paper, we briefly summarize the Kuhn/Popper debate and conclude that if the Kuhnian revolution “reigns supreme,” there are insurgents outside of accounting archivalism that continue to contest the outcome. We next identify the substantive questions that underlie historical research rather than the social advocacy that S&T propound. We then review and categorize accounting history journal publications during the 2001-2005 period. We conclude with an evidence-based assessment of S&T’s assertions as well as the state of current accounting history research.

THE KUHN/POPPER DEBATE

While S&T portray the debate between Kuhn and Popper as a clear victory for Kuhnian devotees, the outcome appears far less decisive. Kuhnian and post-Kuhnian (post-positivist) supporters argue that competing paradigms are incommensurable and cannot be refuted on the basis of evidence each party amasses. This occurs because each paradigm’s supporters would present only that evidence which bolsters their particular perspective, leaving them incapable of disproving the verity

presented by the other side. Consequently, paradigms cannot be refuted on the basis of evidence, which to S&T indicates that 1) the concept of absolute truth can never be established, and 2) that absolute truth cannot therefore exist. Absent the ability to establish absolute truth, S&T [2005, p. 49] argue that “partisanship in history is inescapable.”

Harris [1992, p. 89] acknowledges that the denial of truth, or at least this interpretation of Kuhn’s thinking, “leads directly to a radical relativism with all of attending difficulties.” However, Harris [1992, p. 166] proposes a different solution to resolve intellectual debates, one that most archival historians would readily embrace:

If anything is ever to resolve the dispute between competing theories it will be by the accumulation of more data through experiments by more researchers over a longer period of time.

Laudan [1996, p. 5] similarly characterizes Kuhn, Feysabend, and other post-positivists as “thoroughgoing relativists” who are committed to three overriding principles:

(1) that evidence radically underdetermines theory choice – to the extent that virtually any theory can be rationally retained in the face of any conceivable evidence (*epistemic relativism*); (2) that the standards for theory evaluation are mere conventions, reflecting no facts of the matter (*metamethodological relativism*); and (3) that one conceptual framework or worldview cannot be made intelligible in the language of a rival (*linguistic relativism*).

Unlike S&T [2005, pp. 47, 49], who disdain accounting history “as soldiering under impoverished Archivalism,” and promote “the triumph of Kuhnian and Post-Kuhnian History over Philosophy,” Laudan [1996, p. 5] views post-positivism as:

...an intellectual failure. The arguments on its behalf are dubious and question-begging. Still worse, it has sustained virtually no positive program of research... and that it now teeters on the brink of conceptual bankruptcy.

Marwick [2002, p. 5], the founding professor of history at the Open University, is similarly unequivocal in his refutation of the impact of Kuhnian principles on both scientific and historical research:

Working historians, and working scientists, have gen-

erally been too busy to philosophize about their subjects. *Au royaume des aveugles les borgnes sont rois...*In science, a conspicuous example is T.H. Kuhn, whose fine-sounding thesis about the succession of culturally determined scientific 'paradigms' dictating the topics of research departs from the facts of scientific discovery. Historians and scientists have tended to pay lip-service to these 'kings' before, usually, ignoring their theories and carrying on as before.

Clearly, there is ongoing debate regarding the influence of Kuhnian and post-Kuhnian principles on both scientific and historical research. There is also controversy regarding what Kuhn actually meant by the term "incommensurability." Bird [2000, p. 264] contends that "the central element in Kuhn's epistemological outlook is his neutralism about truth" rather than a deniability of truth, as S&T, Feyerabend, and other post-Kuhnians infer. For example, Kuhn [1970, pp. 4-5] did not maintain that the incommensurability of competing paradigms in science prevents "effective research." Instead, he regarded the existence of "a set of received beliefs" about the natural world as a precondition for its progress. In the first place, it is the belief-set that will set the agenda about which questions to ask. Second, the unexplained anomalies thrown up by these questions will eventually become so compelling as to produce a paradigm shift ("revolution" in science). Thus, for Kuhn [1970, pp. 52-53], progress in the natural sciences is not driven by debates about "the objectives and methods of research," but by revolutionary transformations in generally accepted conceptions, which are themselves the product of more research [Bryer, 1998, p. 670]. Indeed, one of the characteristics of a paradigm is that it should be "sufficiently open-ended to leave all sorts of problems" for its adherents to resolve, making use of the "rules and standards for scientific practice" to which they are "committed" [Kuhn, 1970, pp. 10-11]. Kuhn was not, therefore, the "thoroughgoing relativist" that S&T portray. Instead, he regarded "factual and theoretical novelty" as being "closely...intertwined in scientific discovery" [Kuhn, 1970, p. 53]. It follows that progress in science is not simply an abstraction, a realization which, according to Bryer [1998, p. 691], offers hope for progress in other disciplines, including accounting history:

Thus, from Kuhn's point of view, progress in building a community of historians of accounting depends upon recognition of the competing conceptions of the subject-matter, and a debate in which anomalies are

highlighted and resolved by recourse to imagination, to logic, and to the facts.

In fairness to S&T, we acknowledge that the citations (i.e., “evidence”) we have gathered support our point of view; however, unlike S&T, we believe the Kuhnian “revolution” is indeterminate and that neither relativists nor positivists should claim victory. We also recognize that it is often courageous and ennobling to take a strong moral stance, especially when it refutes the position of those holding both the power and the purse. Notwithstanding, we respect mainstream historians who attempt to be dispassionate about their depiction of past events, especially when they identify competing interpretations of their evidence. For example, one of this article’s authors engaged in a series of heated debates regarding the purpose and nature of accounting at the Springfield Armory and New England textile mills in the early and mid-1800s [Hoskin & Macve, 1988a, b, 1994, 1996; 2000; Tyson, 1990; 1993; 1995; 1998]. We argued back and forth, even though each held different world views and wrote from different “paradigms.” We strongly disagreed on the *interpretation* of the evidence, but that is something which scholarly folks do all the time. Thus, while the clashes were intense, at least on an intellectual level, we never argued about the inherent inability of evidence to bolster our respective positions.

To put these debates another way, historians generally accept that history is subjective to some degree, and that historical progress (i.e., greater understanding about the past) is best achieved through dialogue. In point of fact, post-Kuhnians like S&T rarely provide evidence by which a reader can evaluate the strength of their truth claims.⁴ Absent evidence, their persuasiveness hinges on the passion of their appeal and the logic of their argument, something we tackle head on in the next section of the paper.

THE NATURE OF HISTORICAL RESEARCH

We believe that there are fundamental differences between historical inquiry and social activism. Unlike social activists,

⁴Laudan [1996, p. 9] concludes the concept of incommensurability which underlies Kuhnian and post-Kuhnian thinking has never been systematically evaluated in a way that could lead to the triumph S&T promote: “From the beginning of its vogue in the early 1960s, incommensurability has been a philosophical conundrum in search of instantiation. Neither Kuhn nor Feyerabend, its most prominent early advocates, presents any evidence that natural scientists on opposite sides of a theoretical fence systematically failed to understand one another, as the thesis of incommensurability requires.”

who seek to build a “better” (i.e., more equitable, honorable, humane, etc.) world, historians simply want to understand what happened in the past, why things happened as they did, and perhaps to help explain the present and predict the future, given that past events may serve as prologue in certain circumstances. To obtain their knowledge, historians examine primary documents that were, ideally, created by participants in past events (i.e., memoranda, journals, personal letters, or other first-hand accounts) and/or, secondarily, by contemporary observers of these events (newspaper reports, business records, etc.). In either case, documents form the core of an historian’s understanding and the basis for interpretations. As Evans [1999, p. 69] writes, “what is at issue, therefore, is how historians use documents not to establish discrete facts, but as evidence for establishing the larger patterns that connect them.”

Most historians readily concede that while there may be consensus that particular events played out in a particular fashion, there is rarely a single interpretation that explains why the event occurred or its impact and implications. Again, we fully concur with Evans [1999, p. 72] regarding the use and interpretation of historical documents in arriving at our conclusions regarding these issues:

Documents can be read in a variety of ways, all of them, theoretically at least, equally valid. Moreover, it is obvious that our way of reading a source derives principally from our present-day concerns and from questions that present-day theories and ideas lead us to formulate. Nor is there anything wrong in this.

The difficulty we have with S&T and other social activists is their unabashed intolerance for conventional historical inquiry. This intolerance compels them to reject *all* efforts that seek a greater understanding of the past, *for its own sake*. For example, S&T argue that scholars have an inherent social agenda that drives their search for supporting historical evidence. Accordingly, this evidence is necessarily biased and, thus, its only use is to buttress socially appropriate agendas. Most practicing historians would probably reject this position out-of-hand and be inclined to support Ginzburg’s [1991, p. 83] views concerning the use and interpretation of evidence:

The historian is thus confronted with various possibilities: a document can be a fake; a document can be authentic, but unreliable, insofar as the information it provides can be either lies or mistakes; or a document

can be authentic and reliable. In the first two cases the evidence is dismissed; in the latter, it is accepted, but only as evidence of something *else*. In other words, the evidence is not regarded as a historical document in itself, but as a transparent medium – as an open window that gives us direct access to reality.

As far as accounting history goes, there has been some recognition in the literature of the challenge to ascribing meanings posed by postmodernism, with truth acknowledged as a question of interpretation, in turn depending on the language we have at our disposal for describing it. The emphasis in postmodernist literature on meaning in financial reporting as a reflexive construct of social processes rather than as something containing objective reality [Hines, 1988, 1991] is a case in point. Thus, it is argued there is no such thing as faithfully representing economic reality in accounts. What we are in fact representing is the accountant's view of reality which is determined by their prior training and beliefs. In this scheme, meaning is constrained by language as this is the medium through which meaning is both expressed and understood. Hence, the Foucauldian view of history is that of a series of "discursive formations" [Hopwood, 1987, p. 230; Armstrong, 1994, pp. 28-29], as Miller and Napier [1993, p. 633] discuss:

We emphasize the *discursive nature of calculation*. We attend to all those diverse ways in which meaning and significance is attributed to particular ways of calculating. We are referring here to the language and vocabulary in which a particular practice is articulated, the ideals attached to certain calculative technologies, and the rationales that set out the aims and aspirations of various authorities.

The emphasis is on discursive formations rather than historical events precisely because meanings are acknowledged as contingent on the ways in which knowledge is interpreted and communicated. However, the problem we have with this notion is that careful attention to the singularity of such meanings does not allow the historian to subsume events into generalizations, and generalizations into theory. As a result, this aspect of Foucauldianism has tended to be rejected as accounting history has become more theoretical in recent years. If knowledge can only be interpreted in the context of particular situations, it is not possible to generalize causal relationships which are the essence of theory construction.

To get around this dilemma, Robson [1991], for instance, introduces the general concept of “translation” into his history of the genesis of accounting standards in the U.K., allowing him to sidestep what Armstrong [1994, p. 35] described as the lack of “dynamism” in Foucauldianism as a theoretical explanation of accounting change. Thus, Robson argues that accounting change can be understood as a “process” whereby “particular accounting statements, calculations and techniques” are translated into “wider social, economic and political discourses,” which in turn “suggest new problems and priorities for accounting practices and stimulate the process of accounting change” [Robson, 1991, p. 566]. Ezzamel and Hoskin [2002, pp. 340-341] do something similar while exploring the relationship between accounting, writing, and money. They argue that the whole history of money can be understood as a general process of “supplementarity,” in which successively more complex forms of money are created (i.e., coinage, bills of exchange, endorsed discounted notes, etc.) that enhance its “operation and power” in society [Ezzamel and Hoskin, 2002, p. 361].

There would appear to be a tension in accounting historiography, therefore, over the desire to use history to construct theory in a post-modern world that stresses the relativity of meanings. Whether theoretical history is tenable is debatable given the unpredictability of historical events [Oldroyd, 1999]. Nevertheless, theoretical perspectives on accounting history have gained ascendancy precisely to avoid the criticism of “anti-quarianism” leveled at it by S&T. In particular, there has been a willingness to engage with other disciplines which is the rationale of the interdisciplinary perspectives on accounting movement [Miller et al., 1991]. And to their credit, most theoretical historians recognize the need to ground their theory in archival evidence. Bryer is a case in point. Having first spent many years developing his theory regarding the transition to capitalism, he is now seeking to validate it through archival research [Bryer, 2005, 2006a, b; Bryer et al., 2005].

Indeed, to accept S&T’s view that the past is essentially unknowable in any objective sense, and that it is not therefore worth trying to be objective, robs history of its intellectual imperative of trying to uncover and explain past events, and entails disengaging from the discipline. This can be illustrated by the debate over the existence of an ancient matriarchy. Here, matriarchal study groups outside mainstream academic research have alienated themselves from academic prehistorians, including most feminists, through their rejection of the historical

processes of gathering and evaluating evidence. Instead, they follow the type of social advocacy promoted by S&T in discovering an anti-evidentially based past in which empathy and connectedness with their female ancestors assumes priority. The point becomes to show modern women how much they are repressed, that this was not always the case, and that a better way is therefore possible. But it ceases to be history [Oldroyd, 2004].

Finally, as scholars who are more concerned with accounting history than with the theory of history, we believe that knowledge about the past, accounting or otherwise, must be based on *both* dialogue and knowledge. Furthermore, we believe that the growth in knowledge derives from new evidence or the reinterpretation of existing evidence that often comes from historical inquiry as well as social advocacy and other forms of intellectual activity. S&T unequivocally disparaged current accounting history research in their recent article. The next section of this paper reviews several dimensions of their inquiry to see if S&T's claims hold up.

REVIEW OF RECENT ACCOUNTING HISTORY JOURNAL ARTICLES

We decided to review the main articles that appeared in three peer-reviewed journals that specialize in accounting history – *Accounting Historians Journal (AHJ)*, *Accounting History (AH)*, and *Accounting, Business & Financial History (ABFH)*.⁵ We limited our examination to the five-year period 2001-2005 and acknowledge that earlier or longer periods could provide different results. We included “Interface” articles in *AHJ* and special issue articles that appeared in all three journals. We excluded *ABFH* articles that focus on banking, insurance, valuation, and other aspects of business history that are, in our view, only tangentially related to accounting history. We also excluded articles that are described as comments, responses, editorials, book reviews, conference reports, or commissioned works. As a result of these filters, we reviewed the abstracts of 176 articles that were published in the five-year period of study and categorized them according to five criteria – topic area(s), methodology, time focus, geographic focus, and eclecticism.

Clearly, the most difficult and subjective aspect of our rubric

⁵We recognize that other journals publish articles on accounting history (*AAAJ*, *Abacus*, *ABR*, etc.), but these journals do not specialize in accounting history. Omitting these journals enabled us to distinguish accounting history articles more easily from other accounting-related or business history articles.

has been to identify the *primary* topic area and methodology of an article. To do so, one author initially and independently established a possible breakdown of topic areas. The final breakdown was then revised through dialogue with the other author. Where we could not agree on a primary classification, we chose to place the article in a second or even third category area as needed.⁶ We had far less difficulty in determining an article's primary time and geographic focus, although creating time boundaries between periods was problematic. For these two categories, one of the authors reviewed each abstract, made the assignment, and consulted with the other author to resolve uncertainties.

The last category, eclecticism, is included in order to illustrate the gender and affiliation of the authors of current accounting history publications, as well as to determine if these authors have in fact "avoided engaging this wider literature and maintained...a revivalist preoccupation with 'The Great Men' of accounting" [S&T, 2005, p. 49]. The ratio of non-accounting citations to total citations for each article serves as a surrogate measure of the extent to which accounting historians engage in the wider literature.⁷ Each article was assigned to one of four categories in terms of its citations to non-accounting sources – greater than 75%, 50 to 75%, 25-50%, and less than 25%. Finally, we computed the percentage of articles authored or co-authored by females and those written by scholars with non-U.S. affiliations as measures of eclecticism or diversity.⁸

STRAW MEN AND OLD SAWS

In this section, we use the evidence derived from our review of the literature to identify the straw men and old saws that S&T

⁶We acknowledge that our classification scheme is artificial and arbitrary. That said, our purpose was to organize the journal literature in a way that helped us evaluate S&T's claims and generalizations about accounting history literature.

⁷A citation was considered an "accounting" citation if it included the words "accounting," "account," "financial," or "tax" in the title of the citation or publication, or if the journal or book was clearly an accounting journal (i.e., *Abacus*). In addition, if the author of the citation was known to be an accounting academic, the citation was treated as accounting even if it did not include any of the key words noted above. Finally, the total number of articles was reduced to 166 for this part of the study because the authors could not clearly determine if the citation was accounting or non-accounting because of language in four articles. Our intent is to err on the side of conservatism (i.e., not to overstate the percentage of non-accounting citations).

⁸We contacted each journal's editor to clarify our uncertainties in determining an author's gender, given our unfamiliarity with non-Western first names.

conjure up in their assault on accounting history. Our intent is not simply to refute S&T's contentions but rather to paint a more accurate picture of the domain of current accounting history research. We discern a pattern of faulty reasoning in the majority of S&T's claims, many of which include at least one irrelevant premise as a basis for presenting an opposing position. According to Damer [1987, p. 128]:

This fallacy consists in misrepresenting an opponent's point of view or argument, usually for the purpose of making it easier to attack. There are several different ways in which one may misrepresent an opponent's argument or position. First, one may state it in a perverted form by utilizing only a part of it, by paraphrasing it in carefully chosen misleading words, or by subtly including one's own evaluation or commentary in it. Second, one may oversimplify it...Third, one may extend the argument beyond its original bounds by drawing inferences from it that are clearly unwarranted or unintended.

We illustrate below instances where S&T present false or, more generously, naïve premises in the manner Damer describes. We initially replicate S&T's comments and then briefly describe the fallacy and our findings in ***bold italics***. We base our responses, in part, on our analysis of accounting history journal articles during the 2001-2005 period. We present our conclusions and welcome S&T's rejoinder if we have misrepresented, misinterpreted, or otherwise inaccurately captured their sentiments.

1. "Despite the Kuhnian Revolution, archival antiquarianism reigns supreme....Accounting history's resolute adherence to empiricist, archival, and otherwise antiquarian epistememes..." [S&T, 2005, pp. 47, 49].

While accounting historians continue to prioritize archival-based studies, as do most historians, a number of recent articles can be assigned to a number of more modern and critical categories, including race, culture, and theorizing. In our view, the range of topics and methodologies challenges S&T's conclusion that "antiquarianism reigns supreme."

2. "This paper redresses the balance in two ways: First, by using Kuhn's critique to show archivalist empiricism as incapable of proving a paradigm's truth..." [S&T, 2005, p. 47].

We read and reread S&T's article and are unconvinced that it and Kuhn's critique clearly demonstrate that "archivalist empiricism is incapable of proving a paradigm's truth." Most accounting historians accept the subjectivity of historical truth, but this does not mean that truth does not exist or that it is not worth looking for. After all, events do happen (unless we are dreaming) and for a reason, even if it is an accident.

3. "Accounting history has avoided engaging in this wider literature and maintained a methodological naivety, by excessive internal self-referencing, an over-dependence on influential editorial oracles, and a revivalist preoccupation with 'The Great Men' of accounting" [S&T, 2005, p. 49].

We discovered that only 13 articles out of the 176 articles reviewed are biographical, and only three of these appeared in the last two years of the period – hardly "a revivalist preoccupation with 'The Great Men' of accounting." Indeed, articles on Pacioli and Littleton, the two "great men" identified by S&T are notable by their absence. We also found that over 40% of the articles have more than 50% of their citations from non-accounting sources. In our view, the data indicate that many accounting historians are actively engaging in the "wider literature."

4. "...progressive forms of accounting history have taken a back seat to conservative renditions on the subject" [S&T, 2005, p. 49].

Our review of the 2001-2005 accounting history literature revealed a wide range of primary topic areas including race and gender. In addition, over 30% of the 176 articles included one or more female authors and nearly 70% included one or more non-U.S.- based authors. These data suggest that recent accounting history articles published during the 2001-2005 period are not "conservative" in that they neither focus exclusively on Eurocentric topics nor are they written exclusively by white, Anglo/Eurocentric, male authors.

5. "We conclude that the triumph of Kuhnian and Post-Kuhnian History over Philosophy is a success that has been celebrated everywhere in history except in accounting" [S&T, 2005, p. 49].

As we argued in the earlier narrative, the “triumph” is clearly not celebrated as widely as S&T would suggest.

6. “It is arrogant and self-serving to claim that accounting history is exempt from philosophical scrutiny and pretensions” [S&T, 2005, p. 49].

None of the 176 accounting history article abstracts we reviewed appeared “arrogant and self-serving,” and we challenge S&T to identify one article that makes this claim explicitly.

7. “Nor can archivalism get off the hook by claiming it is pre-philosophical...” [S&T, 2005, p. 50].

We again challenge S&T to identify any one of the 176 accounting history articles that make this claim about its subject matter.

8. “...while some histories purport to be sensitive to context and times, such sensitivity is frequently skin-deep” [S&T, 2005, p. 50].

The wide range of articles and the extensive use of non-accounting source materials suggests that accounting history authors are paying a great deal of attention to context and times.

9. “This is a missed opportunity of tragic proportions for accounting historical research because it has undermined its authority to address pressing problems in accounting practice and theory today” [S&T, 2005, pp. 52-53].

We do not believe accounting historians have the authority or are they well situated “to address problems in practice and theory today.” That undertaking is better left to social activists, contemporary critics, and accounting regulators. Rather, historians should continue to examine, illuminate, and interpret the past.

SUMMARY, DISCUSSION, AND CONCLUSIONS

In general, most historians accept that history is subjective to some degree, and that historical progress (i.e., greater understanding about the past) is best achieved through dialogue. Therefore, each historical study constitutes but one cell of the wider organism that is always growing and developing. This is one reason for the frequently observed phenomenon of each

generation rewriting its own history. It is not just new historians reinterpreting the past because their own social conditioning is different to that of their predecessors. It is because history is essentially about discussion fueled by the examination of new evidence, which in turn prompts re-examination of the old. Sometimes the evidence makes us change our minds. Indeed, this concept of progress in history through the interrogation and re-interrogation of evidence is not so far removed from Kuhn's [1970, pp. 52-53] ideas regarding progress in science. As we have seen, Kuhn maintained that discoveries in science occur when the anomalies uncovered by research under a particular paradigm become so great that they induce paradigm change. The main difference in the models, therefore, lies in the pattern of change. With Kuhn, these shifts in science occur in steps rather than continuously. Most historians, however, are inherently aware of the contingent nature of their investigations. Thus, we agree with Evans [1999, p. 90] regarding how post-modern and other critics of history have made the use of evidence so problematic:

It did not take the advent of postmodernism to point this out. But what postmodernists have done is to push such familiar arguments about the transparency or opacity of historical texts and sources out to a set of binary opposites and polarized extremes. Historians have always understood that they must scrutinize documents and evidence carefully. The language of historical documents is never transparent, and historians have always been aware that they cannot simply gaze through it to the historical reality behind. Historians know, historians have always known, that we can see the past only 'through a glass, darkly.'

Probably the prime example of constructive dialogue in accounting history concerns the role of cost and management accounting in the British industrial revolution. Historians have moved (and are moving) through different stages where initially people like Solomons [1952], basing their history on management accounting textbooks, saw useful management accounting as originating in the U.S. in the later 19th century, to one where the likes of Fleischman and Parker [1991, 1992; see also, Fleischman and Tyson, 1993] and Boyns and Edwards [1996 n.b., 1997; see also, Edwards, 1989; Edwards and Newell, 1991], who look at the records themselves, have successfully championed the utility of earlier British industrial accounts to the extent that previous opponents, such as Hoskin and Macve [2000], now

accept as useful to entrepreneurs, notwithstanding their deficiencies in terms of labor control. And so the debate continues, but without evidence the discussions would become stifled and essentially rhetorical.

In terms of the triumph of the Kuhnian revolution, which S&T promote so passionately, we wonder whether Kuhn really has much to say about history at all. Kuhn's arguments were directed to the natural sciences, and his debates with Popper centered on experimental data. For example, Marwick [2002, p. 11] identifies several fundamental differences between history and the natural sciences which bring into question the applicability of S&T's assertions about accounting history:

Another aspect about the autonomy of history is the differences which undoubtedly exist between history and the natural sciences. The relationships studied by historians are not basically mathematical in the way that those in the sciences are. Obviously, the subject matter studied is very different; history inevitably involves questions of human values, human emotions, human motivations. Historians do not conduct experiments. Scientists work within a framework of theories, which are taken as valid until positively disproved.

Thus, it appears to us that Kuhn's followers like Feyerabend [1975] and S&T, rather than Kuhn himself, have sought to extend Kuhn's arguments to history and other social sciences. There are many pertinent and contentious issues concerning the practice of history that surround the nature of evidence, but placing the writings of Kuhn at the center of these discussions appears unwarranted. While social activists like S&T may continue to prioritize the conflict between relativism and objectivity, historians have moved on and recognize that the most interesting historical questions center on the interpretation of past events, not on the evidence which attests to the existence of these events.

Although we strongly disagree with S&T's comments about accounting history per se, we acknowledge that the vast majority of articles published during the 2001-2005 period within the three specialist, English language, accounting history journals were written by scholars from the western tradition (U.S., U.K., Australasia, and Europe) and address issues in the post-Victorian period (1830-present). Thus, S&T are on firmer ground when they focus their critique on accounting history's preoccupation with Eurocentric issues, which they have done in a more

recent article [S&T, 2006], notwithstanding the long-standing Japanese tradition in this area. However, part of the problem here is one of communication rather than of the work not being carried out, with studies being published in different languages, and by historians outside the accounting academy. Language has been a problem for European scholars, as well as non-Europeans [Carmona, 2004], and journal editors have responded with special issues dedicated to particular geographic locations. The intercontinental World Congresses of Accounting Historians and the Accounting History International Conferences have also been significant in breaking down communication barriers, widening the field of accounting history research. In actual fact, the subject matter of the three English language journals dedicated to accounting history appears to be quite broad with significant space devoted to non-western topics, often through the vehicle of special issues. In conclusion, our review and analysis of the 2001-2005 accounting history journal literature reveals a vital, active sub-discipline, one that is capable of change with a healthy eclecticism of topic, method, time, and place.

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